CURRENT HOUSING RESEARCH

Social, Economic and Technical Research

Volume 17
Number 2
Fall 2010

Canada

CMHC SCHL
HOME TO CANADIANS

CMHC—HOME TO CANADIANS

Canada Mortgage and Housing Corporation (CMHC) has been Canada's national housing agency for more than 60 years.

Together with other housing stakeholders, we help ensure that Canada maintains one of the best housing systems in the world. We are committed to helping Canadians access a wide choice of quality, affordable homes, while making vibrant, healthy communities and cities a reality across the country.

For more information, visit our website at **www.cmhc.ca**

You can also reach us by phone at 1-800-668-2642 or by fax at 1-800-245-9274.

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Issued also in French under the title: ***Recherches courantes sur l'habitation***

Publié aussi en français sous le titre: ***Recherches courantes sur l'habitation***

INTRODUCTION

Under Part IX of the National Housing Act, the Government of Canada provides funds to Canada Mortgage and Housing Corporation to conduct research into the social, economic and technical aspects of housing and related fields.

Current Housing Research is compiled and produced two times a year by the Canadian Housing Information Centre. This publication provides information and access to research which is undertaken and sponsored by the Corporation. It is also available on CMHC's web site at http://www.cmhc-schl.gc.ca/en/corp/li/horetore/horetore_004.cfm

The publication contains information on completed research reports, new publications, videos and bibliographies, as well as planned and ongoing research projects. An alphabetical title index of items listed is included at the end for quick reference.

The overall arrangement of "*Current Housing Research*" is by broad subject category. Within each subject category, lists of planned and ongoing projects and completed research reports are described.

Each entry can contain the following elements:

- The project or report title;
- A description of the project or report results;
- The CMHC Project Officer who is managing the project;
- The Division within CMHC which is responsible for the project;
- For External Research Projects, the grant recipient undertaking the research;
- A Contract Identification Number (CIDN);

- The Status of the project: whether the project is in a planned, ongoing or completed phase. "Planned Projects" are those that are not yet underway, but are likely to be initiated in the current year. "Ongoing Projects" refer to research projects which are currently underway. No reports are yet available. Once the project is completed, and a report is available for distribution, it will be listed as a "Completed Report."

- Whether the report resulting from the research project is available and the address where the completed report can be obtained.

To discuss research projects that are recent or ongoing, please call CMHC General Inquiries at (613) 748-2000 and ask for the CMHC Project Officer identified under each project description.

ACQUIRING THE PUBLICATIONS AND REPORTS CITED AS COMPLETED

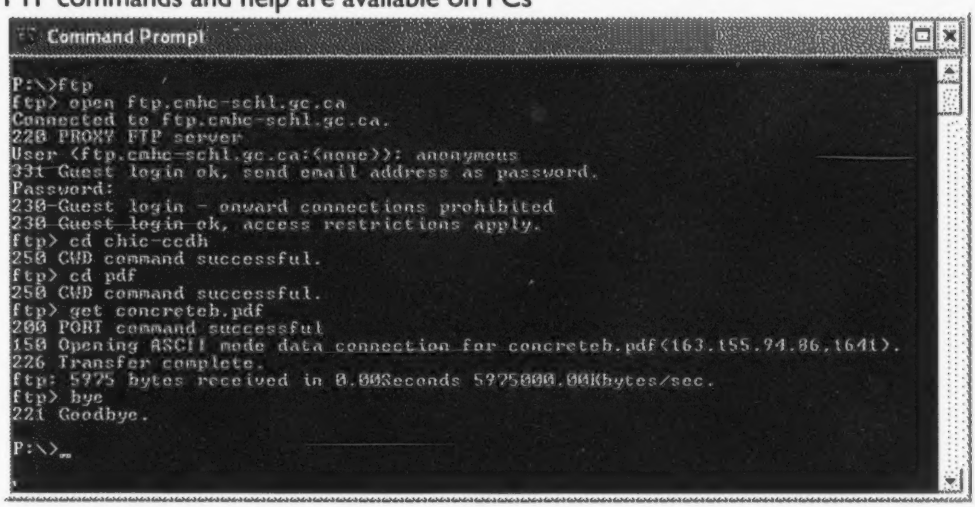
The availability section of each completed entry indicates the contact to obtain the item and whether the item can also be found on the Internet. Most items are available from the Canadian Housing Information Centre and can be ordered by using the information on the order form on the next page. We accept orders by regular mail, fax, phone, and via the Internet.

A number of the items cited are available electronically and the URL is included in the listing. CMHC uses an FTP (File Transfer Protocol) server to distribute reports. FTP has been used on the Internet as a means of transferring files between servers and users for many years and it continues to enjoy very wide use today.

In order to access a file using FTP, software with FTP capabilities is required and there are 3 types of FTP software:

1. Command Line FTP - FTP commands can be entered from a Command line or "DOS Prompt" on all Windows PCs.
2. FTP Client - a purpose built application to connect to FTP servers. These are widely available as commercial products or as shareware or even freeware on the Internet.
3. Some (not all) web browsers - Internet Explorer and Netscape can be used to access FTP files. They use correct protocol when ftp:// is entered in the address bar of the browser. Example: **ftp:**//ftp.cmhc-schl.gc.ca/

Here is an example of using the command line to retrieve a file from FTP.
FTP commands and help are available on PCs



CURRENT HOUSING RESEARCH ORDER FORM

If you wish to receive any of the completed reports or research highlights listed, or if you would like to be on the mailing list to receive *Current Housing Research*, please fill out this form and send it to:

Canadian Housing Information Centre
Canada Mortgage and Housing Corporation
700 Montreal Road
Ottawa ON K1A 0P7
Fax (613) 748-4069
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COMPLETED REPORTS REQUESTED

☐ Send copies of above reports, research highlights

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Name		
Mailing Address (please include e-mail)		
City	Province	PostalCode

CMHC S EXTERNAL RESEARCH PROGRAM

For over 25 years, under the External Research Program, CMHC provided funding assistance to help Canadian researchers carry out research investigations on topics related to housing. The intent of the program was to encourage and draw out new ideas, innovative solutions, and better understanding of housing issues. Although new applications are no longer being accepted, ERP projects underway will be completed. CMHC may publish and disseminate the results through the Canadian Housing Information Centre.

Recipients of ERP grants were selected on the basis of the merit and significance of their proposals by a national committee of housing experts. Committee representatives included experienced researchers and practitioners in government, academic institutions and housing-related professions.

CMHC would like to take this opportunity to thank all of the applicants and winners over the years and congratulate them on their contributions to improving housing in Canada.

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TECHNICAL RESEARCH

ACOUSTICS

FLANKING SOUND TRANSMISSION IN WOOD FRAME MULTI-FAMILY DWELLINGS PHASE 5: CONSOLIDATION FOR ELECTRONIC DESIGN GUIDE

This project will consolidate the results of current and previous NRC-IRC flanking projects (Phases 2 - 4) and present them in the form of a best practice design guide that is easily accessible and useable by builders, architects, and engineers. This design guide will be the primary resource to aid in the design and construction of structures complying with possible future Canadian building-code mandated Apparent-STC and Apparent-IIC requirements, or other national model codes that use ISO metrics.

***CMHC Project Officer** : Terry Robinson* CIDN : 39020900
Division : CMHC International STATUS : Ongoing
AVAILABILITY : Product is not yet available

BASEMENTS, FOUNDATIONS & CRAWLSPACES

BASEMENT WALL INSULATION RETROFIT MONITORING

There have been field observations and research findings in the last several years which suggest that polyethylene as a vapour barrier in many wall assemblies may be excessive, and that other vapour retarder systems may be preferable. The last CMHC research showed that the below-grade portion of interior insulated basement wall assemblies might benefit from more permeability, not less. Various interior insulated assemblies have been suggested as alternatives. This project is measuring the moisture performance of different basement interior insulation wall retrofit assemblies in 10 real houses to see if the research findings can be substantiated in the field, and to look out for unexpected repercussions in changing the current wall construction practice. Ten Saskatchewan basements have been retrofitted and are being monitored. This research is ongoing.

***CMHC Project Officer** : Don Fugler* CIDN : 36970200
Division : Policy and Research Division STATUS : Ongoing
AVAILABILITY : Product is not yet available

RETROFITTING CRAWL SPACES - FIRST NATIONS DEMONSTRATION

The project involved the retrofitting of several wet crawl spaces to solve the moisture problems. The retrofit work was documented and the crawl spaces are being monitored for a period afterwards to verify the effectiveness of the retrofit measures. The case studies will be used to demonstrate how to fix poorly performing crawl spaces. The project has been prepared in conjunction with First Nations housing authorities and responds to a pressing problem found on many reserves.

CMHC Project Officer :** Don Fugler* ***CIDN : 33050200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: FIRE PERFORMANCE OF HOUSES, p. 17

BUILDING MATERIALS

COMPRESSED EARTHBLOCK (CEB) - STRAWBALE HYBRID BUILDING SYSTEM

This project will investigate the performance of straw bale insulation in combination with compressed earth blocks, as a hybrid building system. Earth blocks are found in many other parts of the world, but their use in Canadian buildings, so far, has been limited. The researcher will be monitoring energy use as well as some of the performance characteristics of the earth blocks. The project has been initiated. The earthblocks were cast and construction has been proceeding slowly. Because of the wet summer in 2008, 5% cement was added to the mixture for stabilization. Samples of the earthblocks will be tested at Queen's University for compression and bending, and the results compared to other CMHC earth block tests (Dupuy) and more standard construction material such as bricks and concrete masonry. The energy usage of the structure will be recorded to determine the envelope efficiency of the hybrid structure. Both moisture performance and the extent of cracking will also be monitored for one year after the completion of construction.

CMHC Project Officer : *Don Fugler*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 36260216
STATUS : Ongoing

DOORS AND WINDOWS

BEST PRACTICE GUIDE - WINDOWS

In partnership with Natural Resources Canada and the Homeowner Protection Office (British Columbia), CMHC developed this comprehensive and practical technical advisory document for architects, engineers, builders, renovators, window manufacturers, window installers and others involved in the design, specification, construction, installation and interfacing of windows within the exterior wall assembly in both low-rise and high-rise residential construction. This document provides guidance in selecting the appropriate window performance criteria for the intended application and provides installation details to ensure the performance criteria is achieved through the effective continuity of thermal, air, vapour and moisture barriers at the interface between the window units and the wall assembly.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 30870200
STATUS : Ongoing

EVALUATING THE EFFECTIVENESS OF WALL-WINDOW INTERFACE DETAILS TO MANAGE RAINWATER

Based on the need for effective window-wall interface details to manage water intrusion, CMHC in partnership with the National Research Council (NRC), formed a consortium of interested North American organizations to evaluate specific window-wall interface details to determine how effective the details are in managing rainwater. CMHC and NRC funded the first phase of this multi-year study. The Phase 1 testing program, highlighting wall-window interface details of interest to CMHC, was completed in the fall of 2008. The window testing program included window frames with and without an integral flange as well as wall assemblies with drainage cavities and wall assemblies with direct-applied claddings. The Phase 1 final report is available at http://www.nrc-cnrc.gc.ca/obj/irc/doc/pubs/b-1229.1/b-1229.1.pdf. The Phase 2 and Phase 3 testing programs, which highlight wall-window interface details of interest to the industry (Building Diagnostics Technology Inc. and E.I. Dupont and Nemours & Company) has also been completed. The final reports from Phase 2 and Phase 3 are available upon request from the National Research Council.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 27080200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is available

EXTERIOR WINDOW SHADING DEVICES FOR THE CANADIAN CLIMATE

This project will identify exterior window shading devices that can improve comfort and reduce household energy consumption in the Canadian climate. Existing technologies will be assessed for performance, durability, ease of integration with building envelope elements and user friendliness. The influence of freezing rain, wet snow, or melting/freezing snow on performance and operation will be assessed. Energy savings potential will be modelled to project savings potential for different Canadian climatic conditions, including the North.

CMHC Project Officer : *Ken Ruest* ***CIDN*** : 38300200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SELECTION OF LOW-E COATED GLASS FOR OLDER RESIDENTIAL HIGH-RISE APARTMENT BUILDINGS IN CANADA

Recent research at the Canadian Centre for Housing Technology (CCHT) and the National Research Council Canada (NRCC) revealed that high-solar heat gain low-e coated glass is the most appropriate spectrally selective glass for houses in Canada. However, no similar research has been conducted for older high-rise residential apartment buildings even though they represent a significant proportion of the housing stock. Thus, a complementary research study has been initiated to determine whether high or low solar heat gain glazing in apartment dwellings would be more appropriate for retrofitting into older multi-unit residential buildings to balance the need to control heat losses while encouraging solar gains to help offset space heating loads.

CMHC Project Officer : *Woytek Kujawski* ***CIDN*** : 38840217
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

THERMAL PERFORMANCE OF WINDOW ASSEMBLIES

CMHC in collaboration with the National Research Council, is undertaking a study to investigate the risk of condensation at the window frame perimeter of the interface assembly as a function of both temperature differential and air leakage rate across the assembly. Depending on the types of windows used and the cladding into which the windows are installed there arise different methods to provide drainage that may also affect air leakage through the assembly. This, in turn, may give rise to the formation of condensation along the window, at the sill or along the window sash and glazing panels. Various window installations, including position of the window unit within the wall assembly and different window-wall interface insulating strategies will be subjected to temperature, air pressure differentials and various air leakage rates and paths to investigate the risk to condensation they impose on the window-wall assembly. The project commenced in the summer of 2008. The laboratory testing program has been completed and the final report is being prepared.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 33180200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ASSESSMENT OF RENEWAL OPPORTUNITIES FOR MULTI-UNIT RESIDENTIAL BUILDINGS

Canadian cities, in particular Toronto, have an extensive inventory of post-war high-rise housing. These multi-unit residential buildings (MURBS) have envelopes and services that are nearing the end of their useful lives. Owners of these buildings will soon have to make decisions for renewal and this implies they will require assistance from designers and building science specialists. This research provides a comprehensive review of MURB typologies and the development of integrated over-cladding solutions along with associated cost benefit studies that enable improvements in energy efficiency. The research has been completed and the ***Tower Renewal Guidelines*** are available on-line from the University of Toronto (http://www.daniels.utoronto.ca/trg)

STATUS : New Completed Report
AVAILABILITY : Product is available on the web

DESIGN SURVEY OF LOW ENVIRONMENTAL IMPACT HOUSING

This research project documented case studies of low environmental impact housing (including net zero energy) in Canada and internationally in similar climates. The goal was to identify criteria and specifications for zero environmental impact housing in Canada, develop best practice models towards achieving this goal, and ultimately share information on these "deep green" housing models for Canadian climatic regions. Case studies and a research report will be developed.

CMHC Project Officer : *Woytek Kujawski* ***CIDN*** : 25400200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF AN ENERGY MANAGEMENT PILOT PROGRAM FOR SOCIAL HOUSING IN ONTARIO

CMHC is participating in the development of an Energy Management Program and pilot project for social housing. CMHC will be working with the Social Housing Services Corporation of Ontario to develop an Energy Management Program that will provide local social housing providers with the tools needed to evaluate and implement energy and water efficiency measures in their buildings. CMHC support will be used to develop or adopt tools for the Energy Management Program including utility tracking and on-line energy/water audit facilities, standard energy audits, and communication documents for property owners, managers and residents. CMHC will also participate in the evaluation of energy and water efficiency projects in 20 buildings selected to participate in a pilot project to evaluate the costs and benefits of the Energy Management Program. CMHC support will be useful to establish the Program in Ontario and will also provide other provinces with useful information on the development of central energy programs for their social housing stock as well.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 29820200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ENERGY AND WATER EFFICIENCY RETROFITS FOR MULTI-UNIT RESIDENTIAL BUILDINGS

This project is updating the CMHC publication that provides building owners and managers of residential multi-unit residential buildings with information on cost-effective energy and water efficiency retrofits to reduce consumption, operating costs and environmental impacts of their buildings. New retrofit strategies will be added and obsolete measures will be removed. The cost-benefit information will also be updated.

CMHC Project Officer : *Rémi Charron* ***CIDN*** : 38370200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ENERGY BLOCKS: TOOLS FOR AFFORDABILITY THROUGH ENERGY, CARBON AND COST REDUCTIONS

Can Home Energy Ratings be synchronized with Community Energy Plans to develop energy descent profiles for existing residential neighbourhoods that reduce long-term energy costs? The objective of this research is to create an index tool that links existing databases to show the adaptive energy capacity of housing to achieve EQuilibrium™ housing standards and long-term affordability.

CMHC Project Officer : *Rémi Charron* ***CIDN*** : 41330207
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

ENERGY CONSERVATION IN CANADIAN BUILDINGS USING ADVANCED THERMAL INSULATION

The National Research Council of Canada, Institute for Research in Construction (NRC/IRC) received financial assistance from Canada Mortgage and Housing Corporation (CMHC) and the EcoEnergy Technology Initiative (EcoETI) for the purpose of conducting research on the application of advanced thermal insulation that not only offers higher thermal resistance but is also eco-friendly (i.e. renewable, energy efficient, biodegradable and indigenous). A cradle-to-grave analysis of thermal insulating materials in terms of energy consumption and impact on environment will also be undertaken to help in the selection of appropriate insulating materials. This study, currently commencing its second year of work, will be carried out in four tasks over a three year period: Task 1 (Investigation on advanced thermal insulations) has been completed. Task 2 (Cradle-to-grave energy consumption analysis for thermal insulation materials) and Task 3 (Assess the thermal performance of building components constructed with advanced thermal insulation materials) are currently underway. Task 4 (Demonstrate the impact of advanced thermal insulating materials on the potential energy conservation in Canadian buildings) will be completed thereafter. The project is expected to be completed by spring of 2012.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 39720200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

EVALUATING THE EFFECTS OF TWO ENERGY RETROFIT STRATEGIES FOR HOUSING ON THE WETTING AND DRYING POTENTIAL OF WALL ASSEMBLIES: SUMMARY REPORT FOR YEAR 2007-08 PHASE OF THE STUDY

In 2007 the National Research Council of Canada, Institute for Research in Construction (NRC/IRC) initiated the project "Evaluating the effects of two strategies of energy retrofit for housing on the wetting and drying potential of the wall assemblies-2007-08". Partnership and funding from NRCan (Housing and Buildings /Sustainable Building and Communities CANMET / Group) and CMHC (Sustainable Housing Policy and Research Group) was obtained.

The scope of work included the design of the experiments, the installation of test specimens, the commissioning of the instrumentation, the operation of the test facility, the monitoring, data collection and analysis and reporting in a project conducted at NRC/IRC Building Envelope and Structure's Field Exposure of Walls Facility.

The objectives of the study were:
1) To demonstrate that the properties of the thermal insulation installed on the exterior of the wood-frame wall cavity will affect the temperature, vapour and air pressure gradients, and will consequently affect the wetting and drying potential of the assembly;

2) To demonstrate that air leakage through an assembly is a potent factor in transporting moisture to and from enclosed cavities;

3) To demonstrate that increases in indoor relative humidity levels can result in higher potential for wetting of stud wall cavity elements;

4) To test the hypothesis that walls with exterior insulation are less prone to interstitial condensation than similar walls without such exterior thermal lining.

Prepared by W. Maref ... and others, National Research Council of Canada. CMHC Project Officer: Barry Craig. Ottawa: Canada Mortgage and Housing Corporation, 2009. 1 CD-ROM (14.23 MB)

STATUS : New Completed CD-ROM

AVAILABILITY : Canadian Housing Information Centre and
Ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Energy%20Retrofit%20Strategies%20Report_w.pdf

EVALUATION OF THE IMPACT OF ENERGY EFFICIENCY AND SUSTAINABLE DEVELOPMENT MEASURES ON AFFORDABLE HOUSING

This External Research Program study will analyze the impact of including energy efficiency and sustainable development (treatment of grey water, "green materials") measures on the operation of community housing buildings. The analysis will deal with actual energy costs vs. projected costs, the costs of maintenance service and the effects on maintenance practices.

CMHC Project Officer : *Woytek Kujawski*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 36260210
STATUS : Ongoing

INVESTIGATION OF THE PERFORMANCE AND USE OF VACUUM INSULATED PANELS IN NEW AND EXISTING WOOD FRAME CONSTRUCTION

The Canadian housing industry is moving towards producing buildings with high energy efficiency, as demonstrated by CMHC's EQuilibrium™ initiative, the RAIC 2030 Challenge and exports of Super E homes. A key component of highly energy efficient housing is a super insulated building envelope. However, using conventional insulation to achieve this leads to very thick building envelope assemblies that present cost, construction, market acceptance and regulatory challenges. This External Research Program study explores the potential for the use of thin highly insulated vacuum insulation panels (VIPs) in new and existing Canadian low rise residential housing in order to meet these challenges in a practical cost effective manner. A report investigating the performance of vacuum insulated panels in wood frame construction will be produced.

CMHC Project Officer : *Barry Craig* ***CIDN*** : 40140206
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

LEAST COST ANALYSIS FOR CANADIAN NEW HOUSING

This External Research Program research project will provide insight on what upgrades could be incorporated into new housing to improve energy efficiency without adding any extra net cost to the homeowner based on life cycle cost analysis. The study will characterize the energy savings against the costs of the energy upgrades to determine at what point declining energy savings no longer support upgrade costs without representing an overall expenditure increase to the homeowner. The research is divided into two parts: 1) Simulation and analysis of energy efficient building upgrade potential for the Canadian residential sector using representative housing data and 2) Simulation and application of the lowest cost upgrade to the house to determine the overall cost with the upgrade(s) to meet the energy efficiency objectives.

CMHC Project Officer : *Woytek Kujawski* ***CIDN*** : 40140202
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PERFORMANCE ANALYSIS OF RESIDENTIAL HOT WATER EFFICIENCY DEVICES

This project will look at the energy savings (if any) that come from replacing conventional residential water heaters with tankless (or instantaneous) appliances. The project will assess domestic hot water energy consumption before and after the retrofits of tankless gas-fired water heaters in at least 50 houses so that savings can be compared. Water usage and homeowner satisfaction will also be surveyed. CMHC has engaged the support of two utilities in Ontario and Saskatchewan to help find test houses. Most of the Ontario houses have been obtained and work is continuing to find houses for the Saskatchewan component of the field testing. Monitoring results are expected through 2010 and 2011.

CMHC Project Officer : *Don Fugler* ***CIDN*** : 38410200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

STUDY OF ENERGY CONSERVATION OPPORTUNITIES IN THE RETROFIT OF BUILDING ENVELOPES IN LARGE MULTI-UNIT HIGH-RISE RESIDENTIAL BUILDINGS

Many buildings in the Lower Mainland of British Columbia have undergone comprehensive rehabilitation to remedy moisture-related problems. Little or no attention was specifically directed at energy conservation or greenhouse gas emissions. CMHC, the Homeowner Protection Office, City of Vancouver, BC Hydro and Terasen Gas provided funding for this research project to review and assess the effects of building enclosure improvements on the space conditioning energy use in typical high-rise residential buildings in the Lower Mainland of BC and then to develop better strategies that take into account enclosure repairs, energy conservation and greenhouse gas emissions. This project includes the collection of basic building enclosure information and energy (gas and electricity) consumption data for some 39 mid-rise and high-rise buildings in the lower BC mainland. Subsequently, a more detailed analysis will be conducted on several of these buildings to more precisely determine where and how much energy is being consumed. Where buildings have undergone building envelope rehabilitation, this project intends to assess the effects the work has had on the buildings space conditioning energy use. This project is ongoing.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 38330200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUPPORT FOR THE DEVELOPMENT OF A NEW CSA STANDARD ON FANS AND MOTORS

The Canadian Standards Association has formed a technical subcommittee on the performance of motor/fan combinations. To ensure that the subcommittee membership includes individuals with residential expertise, CMHC retained the services of a consultant to attend the CSA meetings and provide guidance on residential fan motor efficiency to the standards committee. Several meetings have been held and more will be scheduled prior to voting on the standard.

CMHC Project Officer : *Don Fugler* ***CIDN*** : 37730200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

THERMAL, ENERGY AND MOISTURE PERFORMANCE OF ALTERNATIVE (NON-WOODFRAME) HOUSING SYSTEMS

This project will characterize the thermal performance of the increasingly popular Insulated Concrete Form (ICF) housing system and assess the impact of ICF's on whole-house (or building) energy use (particularly in comparison with traditional wood-frame construction). This research project will be useful to evaluate and assess the contribution and impact of any thermal mass benefits embedded in the ICF system (i.e. the concrete) in comparison with the nominal RSI values which comprise the individual components of the system. Two ICF wall assemblies were constructed in the summer of 2009 and installed with sensors and monitoring equipment, into the Field Exposure of Walls (FEWF) test facility at the NRC. Monitoring of these walls, exposed to real climate loads, will take place for 1 full year. The project is expected to be completed by February 2011.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 38350200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: SUSTAINABLE BUILDING ENVELOPE RETROFITS FOR EXISTING HOUSES, p. 31

FIRE PERFORMANCE OF HOUSES. PHASE 1. STUDY OF UNPROTECTED FLOOR ASSEMBLIES IN BASEMENT FIRE SCENARIOS

With the advent of new materials and innovative construction products and systems for use in construction of houses, there is a need to understand what impacts these materials and products will have on occupant life safety under fire conditions and a need to develop a technical basis for the evaluation of their fire performance. To address these needs, the Canadian Commission on Building and Fire Codes (CCBFC) and the Canadian Commission on Construction Materials Evaluation (CCCME) requested the National Research Council of Canada Institute for Research in Construction (NRC-IRC) to undertake research into fires in single-family houses to determine factors that affect the life safety of occupants.

The research sought to establish the typical sequence of events such as the smoke alarm activation, onset of untenable conditions, and structural failure of test assemblies, using specific fire test scenarios in a full-scale test facility. This test facility simulated a typical two-storey detached single-family house with a basement, which complied with the minimum requirements in the National Building Code of Canada (NBCC). The full-scale experiments addressed the life safety and egress of occupants from the perspective of tenability for occupants and structural integrity of structural elements as egress routes.

The overall research is planned for a number of phases of experimental studies with each phase investigating specific structural systems of single-family houses based on specified fire scenarios. Phase 1 of the experimental studies focused on basement fires and the floor assembly located over a basement. The objectives were to understand the factors that impact on the ability of occupants on the upper storeys to escape in the event of a basement fire. The safety of emergency responders in a fire originating in single-family houses was not within the scope of this research project.

Prepared by J.Z. Su, N. Bénichou, A.C. Bwalya, G.D. Lougheed, B.C. Taber, P. Leroux, G. Proulx, A.H. Kashef, C. McCartney, J.R. Thomas of the Fire Research Program, Institute for Research in Construction, National Research Council of Canada. CMHC Project Manager: Barry Craig. Ottawa: Canada Mortgage and Housing Corporation, 2009. 1 CD-ROM

Summary Report
Part 1 – Results of Tests UF-01 and UF-02 (Solid Wood Joists)
Part 2 – Results of Tests UF-03 and UF-09 (Wood I-Joists)
Part 3 – Results of Tests UF-04 (Light-Gauge Steel C-Joists)
Part 4 – Results of Tests UF-05 (Metal-Plate-Connected Wood Trusses)
Part 5 – Results of Tests UF-06, UF-06R and UF-06RR (Wood I-Joists B)
Part 6 – Results of Tests UF-07 and UF-08 (Metal-Web-Connected Wood Trusses)

STATUS : New Completed CD-ROM

AVAILABILITY : Canadian Housing Information Centre

SIMPLE DESIGN TOOLS FOR THE ASSESSMENT OF UPHOLSTERED FURNITURE BURNING IN HOME FIRES

The life safety of occupants and fire fighters will be improved with a better understanding of the effects of upholstered furniture in living and sleeping areas when exposed to fire. This work will provide a simple design tool/model that demonstrates the time elapsed before major fire events occur, and the time elapsed before conditions become untenable. The study will acquire and analyze data, then model and validate it for two houses - one detached unit and one townhouse unit - furnished with typical upholstery. The final report should provide designers with simple tools to evaluate the risk of fire involving different furniture on life safety.

CMHC Project Officer : *Barry Craig*
CIDN : 38840219
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available

GREEN ROOFS

HEATING-SEASON ENERGY SAVINGS FROM EXTENSIVE GREEN ROOFS

Green roofs are well known for their ability to cool buildings in the summer, reducing greenhouse gas emissions and energy costs for air conditioning. The benefits of green roofs for the thermal performance of buildings in winter are poorly understood. This research will incorporate data from experimental green roofs into building energy models to calculate expected energy savings during cold seasons for different types of housing.

CMHC Project Officer : *Rémi Charron* ***CIDN*** : 41330205
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

AIR LEAKAGE CONTROL IN MULTI-UNIT RESIDENTIAL BUILDINGS (MURBS) - DEVELOPMENT OF TESTING AND MEASUREMENT STRATEGIES TO QUANTIFY AIR LEAKAGE

The testing, measurement and quantification of the airtightness performance or air-leakage characteristics of multi-family buildings has not evolved to the same extent that it has in the low-rise, single family home sector. Nevertheless, energy performance, indoor comfort, fire and life safety, amongst other criteria, depend on the airtightness characteristics of not only the envelope but also the unit compartments in multi-family buildings. The objectives of this project will include the updating and summation of the current knowledge related to testing methodologies and protocols for assessing and quantifying the airtightness of multi-family buildings, determining the existence of other international building airtightness initiatives (whether they are programs or regulations) and evaluating their effectiveness; and to assess whether or not the various construction industry stakeholders, in those jurisdictions, have effectively responded to meeting the airtightness requirements. This research will further knowledge and understanding of airtightness testing and airtightness performance of multi-family buildings and will provide a foundation for advancing this area of study in the Canadian context.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 39930200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF AN OCCUPANT ENGAGEMENT STRATEGY TO SUPPORT ENERGY AND WATER EFFICIENCY IN MULTIPLE UNIT RESIDENTIAL BUILDINGS

This project will develop an occupant engagement strategy to improve energy/water efficiency and indoor conditions in multi-unit residential buildings. The project will include a literature search, the development of an engagement strategy (e.g., occupant's guide, behaviour modification approaches, engagement strategies, "reward" possibilities and the integration of the strategy within a post occupancy evaluation project). The strategy will be tested in a building undergoing a post occupancy performance evaluation to determine the extent to which improvements in performance are possible.

CMHC Project Officer : *Woytek Kujawski* ***CIDN*** : 39730200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

ENGINEERED BUILDING ENVELOPE SYSTEMS FOR OUTDOOR/INDOOR CLIMATE EXTREMES

CMHC is contributing to a National Research Council project to identify indoor conditions and weather in northern and northern-coastal communities, and select appropriate building envelope assemblies for extreme climates. The project assesses the hygrothermal performance of these assemblies by computational and laboratory testing, measures air leakage by means of blower door tests and produces performance parameters for heating and high humidity climates. The project also analyzes the energy and environmental impact of proposed building envelope assemblies. The research findings will be published in a research report, and presented in seminars throughout Canada and the North.

CMHC Project Officer : *Barry Craig* ***CIDN*** : 29600200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSE CONSTRUCTION

DESIGN OF WIND-LOADS FOR RESIDENTIAL PHOTOVOLTAIC SYSTEMS

The University of Western Ontario was awarded an External Research Program grant to undertake a research project to evaluate wind-induced loads on roof-mounted photovoltaic (PV) residential systems; the aim of which is to identify configurations that minimize wind loads on solar panels and roof-cladding systems. The study will be limited to typical 2-storey, single-family homes with roof-mounted PV panels or a PV-Thermal system. The research will investigate various parameters including roof slope, solar panel position and orientation with respect to wind-flow, and height of the panels above the roof surface. The research project is ongoing.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 40140204
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

"GLOSSARY OF HOUSING TERMS"- UPDATE

This project reviews the current edition of "Glossary of Housing Terms" and conducts research to identify new terms and definitions which are missing. The "Glossary of Housing Terms" was last updated in 1995, resulting in the absence of a number of new housing terms, some of which are included in CMHC's new information products. Examples of new housing terms missing from the "Glossary of Housing Terms" include: surfactants, enthalpy recovery ventilator, building science, polyolefin, xeriscaping, pyrite, stachybotrys chartarum and brownfields. All the existing terms and definitions have been reviewed to ensure they are still appropriate and that the definitions are accurate. Construction related acronyms and abbreviations, and terms common to multiple unit residential buildings have also been added. The revised "Glossary of Housing Terms" English manuscript is complete.

CMHC Project Officer : *Barry Craig* ***CIDN*** : 33070200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IMPROVED PREDICTION OF SEISMIC RESISTANCE OF PART 9 HOUSES

Currently available approaches for the prediction of seismic resistance of conventional wood-frame construction (that is, buildings conforming to Part 9 of the National Building Code of Canda (NBCC)) are not able to predict the seismic resistance in a reliable manner. Experience in earthquakes and recent shake table tests of two-storey specimens have demonstrated generally good performance, but the limitations of this favourable behaviour are not well defined. A funding grant from the CMHC External Research Program has been provided to Forintek Canada Corporation (FP Innovations) to undertake a research project, to develop simple mechanics-based methods for the prediction of seismic resistance of conventional wood-frame ("Part 9") houses. Forintek investigated the adequacy of the bracing requirements for conventional wood-frame construction as outlined in the 2004 Canadian Wood Council Design Guide (CWC Guide) and the proposed Part 9 of the 2010 NBCC. The results showed an imbalance in the required lengths of braced walls in the short and long directions of rectangular buildings. In most studied cases, neither the 2004 CWC Guide nor the proposals for the Part 9 of the 2010 NBCC meet the seismic requirements of Part 4 of NBCC 2005 for high seismic zones. To address this imbalance between required lengths of braced walls in short and long directions of a rectangular building in conventional wood-frame construction, the researchers at FP Innovations proposed a new calculation method, based on the minimum length of braced wall as a function of the floor area of the building.

CMHC Project Officer : *Silvio Plescia*
Division : External Research Program
AVAILABILITY : Product is available

CIDN : 34380208
STATUS : Ongoing

RACKING PERFORMANCE OF WOOD SHEAR WALLS CONSISTING OF FINGER-JOINTED STUDS

In order to make lumber more sustainable and to reduce cost and waste, the use of finger-jointed wood studs is now permitted in building codes and is becoming increasingly common in residential construction. However, the strength of these studs when subject to tensile stress is not well understood. This External Research Program project tests the racking strength of finger-jointed wood studs used in shear walls. The data produced by this research will inform the designers of codes and standards of the comparative performance of finger-jointed and regular dimensional lumber studs when used in shear walls. It also measures the effect on racking strength of the number of joints in the stud.

CMHC Project Officer : *Barry Craig*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 38840206
STATUS : Ongoing

REDESIGN PRODUCTION PROCESS IN HOUSING CONSTRUCTION USING LEAN PRINCIPLES AND VALUE STREAM MAPPING

Lean construction has recently attracted considerable attention in the home building industry. Lengthy delivery time and significant waste in the construction process have caused many home builders to seek a more effective production model that will increase process reliability, reduce total lead time and improve overall product quality. Although housing construction provides the closest analogy to manufacturing, a high level of variability prevents the direct transplantation of lean paradigm and techniques. Supported by CMHC, and in collaboration with a local home builder, researchers developed a systematic approach using Value Stream Mapping (VSM) techniques to analyze the current process and to formulate a lean production model. After an 18-month

implementation, significant improvement has been seen in terms of cycle time, process reliability and product quality.

Prepared by Dr. Mohamed Al-Hussein and Haitao Yu. CMHC Project Officer: BarryCraig. Ottawa: Canada Mortgage and Housing Corporation, 2009. (External Research Program Report) 58 pages (2.92 MB)

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2009R27_w.pdf

SEISMIC ISOLATION OF RESIDENTIAL WOOD FRAME AND LOW- AND MEDIUM-RISE MASONRY BUILDINGS

McMaster University has been granted funding through the CMHC External Research Program to investigate the application of a novel and economical fibre reinforced elastomeric base isolation system for both light-weight wood frame and low- and medium- rise unreinforced masonry residential buildings. The objective of this study is to determine if an economically viable base isolation system can be developed to alter the natural period of the building and isolation system out of the range of maximum earthquake intensity for seismically vulnerable residential buildings. The test program will include the scaled model shake table testing of both fixed-base and isolated-base foundation buildings to assess their dynamic response and a parametric analysis will be conducted for four seismic jurisdictions across Canada to assess the effectiveness of the base-isolation system to mitigate or reduce the seismic loads on the building.

CMHC Project Officer : *Silvio Plescia*
CIDN : 38840214
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available

SUSTAINABLE BUILDING SCIENCE BEST PRACTICES

The objective of this project is to consolidate energy-efficient and sustainable building science best practices into one comprehensive illustrated source that will serve as a text book and training manual for building science courses. It will be used in architectural programs at colleges and universities, and by builders and designers. The result of this research will be a common reference that describes sustainable building science for Canadian construction that is based on rigorous scientific research and testing, and energy conservation measures and that demonstrates best practices. It will be tailored to existing teaching curricula and it will be extremely useful to architects, engineers and building scientists resulting in an accurate and common understanding of sustainable building science principles and their interrelationship with one another.

CMHC Project Officer : *Barry Craig*
CIDN : 35610200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

CANADIAN RADON MITIGATION CASE STUDIES

The project will investigate the performance of subslab depressurization radon mitigation systems installed in 20 Canadian houses. Field testing will show whether houses with existing systems have problems with exhaust duct leakage or foundation chilling. The testing will also help quantify the possibility of icing with vertical stacks, the proportion of indoor air that is exhausted from these depressurization systems, and the contribution of these exhaust fans to house depressurization. The results of this research will help to shape Canadian radon mitigation training and the radon advice provided to consumers by CMHC and Health Canada.

CMHC Project Officer : *Don Fugler*
CIDN : 39790200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

COLD CLIMATE RADON MITIGATIONS : A CANADIAN'S PERSPECTIVE

This research reveals the combined knowledge and methods of radon industry mitigation professionals that have mitigated over 8500 cold climate homes in the last year.

This research paper documents to what degree existing ASTM International E2121-08 Standards are actually being followed by radon mitigators who work in North American cold climates. The researcher interviewed 51 certified and/or state licensed professional radon mitigation contractors who install radon mitigation systems in the cold climate zones of the USA. These mitigators were selected because they install radon mitigation systems in the same climate zones as Canadian radon mitigators. These climate zones are referred to as ASHRAE climate zones 5, 6, 7 & 8. This research also includes interviews of 5 highly respected European mitigation professionals to determine what they are doing in Europe to mitigate radon in cold climates.

The three specific areas this research focuses on are the location of the fan, the location of the discharge piping, and the discharge piping termination direction (horizontal or vertical).

Prepared by Robert (Bob) Wood. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2010. (External Research Program Report) 23 pages (591.17 KB)

Note: No. 10-100 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 67067)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2010C51_W.pdf

LET'S CLEAR THE AIR INDOOR AIR QUALITY (IAQ) INITIATIVE

This initiative delivers information on indoor air quality in the home to targeted audiences, the end result of which will benefit Canadian homeowners and occupants. Basic information to increase awareness and appreciation of indoor air problems is through the one-day Let's Clear the Air seminar (for housing and health professionals) or the Build and Renovate to Avoid Mold workshop (for builders, renovators, architects, real estate and insurance appraisers). A two-day Mold Remediation Workshop trains builders, renovators and contractors on how to remediate mold safely and properly. Qualified individuals can also proceed to the CMHC Residential Indoor Air Quality Investigator Training Program. Individuals who complete the training program acquire the skills to inspect homes for IAQ problems and to provide informed advice to homeowners on how to correct these problems. As a private business, they offer their professional services to the public for a fee. For referral purposes, a list of persons having completed the training is available from CMHC offices.

CMHC Project Officer : *Regina De La Campa* ***CIDN*** : 16230300
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Seminar/training is available

REVIEW OF THE RELATIONSHIP BETWEEN HOUSE VENTILATION RATES AND HEALTH

This work, being led by Quebec public health agency (INSPQ) and National Research Council (NRC), is attempting to establish the relationship between adequate ventilation and health (or inadequate ventilation and poor health), through literature searches and appropriate field testing. The project should lead to a better understanding of the relationship between house ventilation and occupant health. If the project establishes a strong correlation between good ventilation and healthy residents, it will be useful material for building codes, medical authorities, ventilation standards, and the ventilation industry. The first year involves house and occupant characterization. CMHC is supporting the characterization of the houses. All the houses will have two airtightness tests and 4-5 tracer gas air change rate tests, as well as measurements of the indoor air quality and occupant health status. Starting the fall of 2010, half the sample houses will have their ventilation rate increased by 0.15 air changes per hour, and the health status of the asthmatic children will be monitored for one year to see if the increased ventilation results in health benefits. CMHC will be releasing a Research Highlight on the air change rates and airtightness data of this housing sample.

CMHC Project Officer : *Don Fugler* ***CIDN*** : 35560200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUPPORT FOR IAQ/HOUSE CHARACTERIZATION AND DATA ANALYSIS - MCMASTER UNIVERSITY CHILD STUDY

CMHC is supporting this multi-year, inter-institute collaborative research study to address the influence of indoor environments on asthma and allergy. The study will follow 5000 pregnant women and their children, from birth to 5 years of age, to understand the indoor environmental exposures that may result in allergic and respiratory disease. Among other things, the research will provide information on housing characteristics, occupant factors related to the operation of the houses and the presence of indoor biological contaminants. CMHC has led three rounds of in-depth technical training to research assistants who will use home assessment questionnaires during walk-through home visits with the participating families. The pilot phase of the study closed on December 15, 2008, with 200 mothers and children recruited over a two month period. Important information on recruitment strategies, questionnaires, home assessments and birth events has been collected. The questionnaires and home assessments have been reviewed and improved. The study has now moved to the implementation phase, with over 1000 families recruited among the four centres (Vancouver, Edmonton, Winnipeg and Toronto). A fourth training session is planned for replacement research assistants and will take place before March 2011.

CMHC Project Officer : Regina De La Campa ***CIDN*** : 35580200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

INDOOR ENVIRONMENT

SURVEY OF CHARACTERISTICS IN HOMES WITH ELEVATED RADON LEVELS

This External Research Program project surveyed houses in a radon-prone area of Winnipeg to discover whether there are common house characteristics that elevate (or reduce) radon concentrations in these houses. The contractor will also be looking at the impact of the application of a simple remedial measure, a floor drain trap, on the radon reduction in these houses.

CMHC Project Officer : *Don Fugler* ***CIDN*** : 40140203
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MOISTURE AND MOLD

CONTRIBUTION TO THE INDUSTRIAL RESEARCH CHAIR IN ALLERGENS AND TOXINS FROM MOLDS IN THE BUILT ENVIRONMENT

CMHC is supporting the ongoing research of the National Science and Engineering Research Council Chair on Allergens and Toxins from Molds in the Built Environment at Carleton University. The purpose of this support is to help address the problem that there is no method to obtain a quick and inexpensive determination of the nature of mold contamination in a house. A more fundamental understanding of the by-products of mold that are harmful to people is needed along with knowledge regarding the thresholds that should be avoided and cheap and reliable ways of classifying moldy and non-moldy houses. The first five year's work of the Chair developed the expertise to identify human allergens, produce antibodies specific to each allergen and isolate and test the effect of toxins on lungs from Stachybotrys chartarum, Aspergillus versicolor and Penicillium chrysogenum, three representative fungi found in houses that require large, medium and low amounts of moisture. The second five years, that started in June 2006, will expand the expertise to a larger number of molds to make it feasible to use these reagents as an inexpensive and reliable way of testing for mold contamination in houses.

CMHC Project Officer : *Regina De La Campa* ***CIDN*** : 34070200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

LITERATURE REVIEW ON HISTOPLASMA, BLASTOMYCES AND CRYPTOCOCCUS GATTII AND THE IMPLICATIONS FOR THE DESIGN, OPERATION AND MAINTENANCE OF HOUSING

This project is being conducted to compile scientific literature on fungi that may be found in and around housing. A thorough literature review of Histoplasma capsulatum, Blastomyces dermatitidis and Cryptococcus gattii, three fungi that cause infectious diseases in people was conducted by a mycology expert. Histoplasmosis occurs from exposure to feces of birds and bats, while blastomycosis occurs after exposure to the spores in soil. Infections due to cryptoccoccus gattii are limited to Vancouver Island, though cases have been seen in Vancouver. The literature review will form the basis of housing advisories on how to avoid exposure to these fungi in residential settings. The project is a collaborative effort between CMHC and Health Canada.

CMHC Project Officer : *Regina De La Campa* ***CIDN*** : 36350200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MOISTURE AND MOLD

WATER PENETRATION THROUGH THINNER VENEER WALL

Ryerson University was awarded a grant, under CMHC's External Research Program, to undertake this research project to study the potential for reducing the thickness of masonry cladding (or redesigning masonry units to be lighter and use less material) and still maintain acceptable durability and water penetration performance. The project will focus on issues of resistance to water penetration and durability and will specifically investigate the impact of dimensional changes on the water penetration into the wall (air) cavity. The project is ongoing.

CMHC Project Officer : *Silvio Plescia*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 36260215
STATUS : Ongoing

NORTHERN HOUSING

CMHC/NWTHC NORTHERN SUSTAINABLE HOUSE (A-BASE)

The project will develop a prototype for the construction of culturally appropriate highly energy efficient housing throughout the Northwest Territories (NWT). It is expected that the design and construction and the cost/benefit analysis of the house will assist in facilitating the use of construction details and practices throughout the NWT and the North that significantly improve building performance. Construction of the house will be completed in 2010. The energy performance of the house will be monitored for a period of 15 months post-occupancy to determine the extent to which the performance targets have been realized.

CMHC Project Officer : *William Semple*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 39850200
STATUS : Ongoing

FUNDING SUPPORT FOR THE NORTHERN SCIENTIFIC TRAINING PROGRAMME

The Northern Scientific Training Programme (NSTP) supports northern research studies by providing universities with funding to help offset the costs associated with travel and accommodation in the North. This project provides support for community-based research and support to traditional knowledge through the Arctic Colleges and Northern Research Institutes. The project increases research capacity within the North, contributes to the research work, and provides northern peoples with enhanced learning, training and employment opportunities within their communities. The project will provide funding to the NSTP for a period of five years, from 2009 to 2013.

CMHC Project Officer : *William Semple*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 37850200
STATUS : Ongoing

INTEGRATED DESIGN AND EVALUATION OF A CONSTRUCTED NORTHERN SUSTAINABLE HOUSE (E/2 PROTOTYPE)

In this project, two "Northern Sustainable Houses" have been designed by CMHC in partnership with a Tr'ondek Hwech'in First Nations community in the Yukon and the Nunavut Housing Corporation in Arviat, Nunavut. The houses have been designed to consume less than 50% of the Model National Energy Code of Canada for Houses energy requirements, and are suited to the northern culture and lifestyles. The project has incorporated local knowledge and experience of members of the northern communities and territorial housing providers where the houses were located. Construction of the Tr'ondek Hwech'in House was completed in January, 2008. Materials for the NHC Arviat House were sea-lifted to the community during the summer/fall of 2009 and construction will start in the summer of 2010. The evaluation of the projects will include monitoring the energy performance of the constructed houses, carrying out a cost/benefit analysis of the energy savings of each Northern Sustainable House vs. a typical new house in the community, and carrying out an analysis of the success of the cultural issues being addressed in the design. CMHC facilitated design workshops, was the lead in designing the houses, and is undertaking the performance evaluation of the Northern Sustainable House Prototypes. A 15 month monitoring project and report on the completed Tr'ondek Hwech'in House was completed in December 2009. The project is funded in part by the Program for Energy Research and Development (PERD).

CMHC Project Officer : *William Semple* ***CIDN*** : 33240200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: ENGINEERED BUILDING ENVELOPE SYSTEM FOR OUTDOOR/INDOOR CLIMATE EXTREMES, p. 19
ACHIEVING 90% REDUCTION IN ENERGY CONSUMPTION IN SUSTAINABLE NORTHERN HOUSES, p. 27
SUSTAINBLE HOUSING IN THE NORTH, p. 38
ROLE OF PUBLIC HEALTH INSPECTORS IN MAINTAINING HOUSING IN NORTHERN AND RURAL COMMUNITIES, p. 41
SURVEY OF ISSUES AND CHALLENGES TO PROVIDING MARKET HOUSING FINANCE IN THE NORTHERN TERRITORIES, p. 49

RENOVATION AND INSPECTION

DESIGN AND SPECIFICATION OF NET ZERO ENERGY BUILDING ENVELOPE RETROFITS

This research investigates the technical and economic challenges associated with upgrading the building envelopes of older housing as a part of overall renovations that target net zero energy performance levels. This research will help the housing industry understand and undertake highly energy efficient and durable building envelope retrofits to houses. It will include measures to reduce the energy consumption and environmental impact of Canadian housing. It will also provide guidance to how to renew the building envelopes of aging Canadian houses. This will aid in the development of policies and programs to support the environmental agenda of the federal government in the residential sector.

CMHC Project Officer : *Barry Craig* ***CIDN*** : 40230200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RENOVATION AND INSPECTION

GREEN RENOVATION GUIDE FOR RENOVATORS

Under this project, CMHC will work closely with industy to develop a guide for renovators on sustainable "Green" renovation for their clients. The Guide will be developed with the support of the Canadian Home Builders Association and will include

- what products and practices can improve the overall environmental performance of a renovation;
- how to avoid "greenwash";
- Healthy Housing tips;
- how to avoid renovation pitfalls that can undermine the post-renovation performance of a house; and
- simple diagnostics for common technical problems for various types of residential renovation projects.

CMHC Project Officer : *Ken Ruest* ***CIDN*** : 40940200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

See also: Socio-economic research on Renovation and Inspection, p. 54

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

ACHIEVING 90% REDUCTION IN ENERGY CONSUMPTION IN SUSTAINABLE NORTHERN HOUSES

This project applies Net Zero (EQuilibrium™) technology to the design of a house to be built in the Yukon with the objective of having the home consume 90% less energy than the amount used by the house were it to be built to the Model National Energy Code for Houses (MNECH). CMHC provided technical information and support for the designs and architectural drawings prepared by the Tr'ondek Hwech'in First Nation Band. A mechanical consultant with experience in the design of renewable energy systems and proficient with Hot2000 computer modelling designed the mechanical systems, provided layout drawings, and simulated estimated energy consumption for a family of two adults and two children. The energy consumption of the dwelling will be monitored for one year following occupancy. The developer provided a description of the design and technologies used, as well as itemized cost comparisons to a similar house conforming to the MNECH and to the house built by the Tr'ondek Hwech'in First Nation Band. The project produced a research report that may assist in designing and building sustainable housing and establish the feasibility of near net zero energy houses in the North.

CMHC Project Officer : *Barry Craig* ***CIDN*** : 38260200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

EARTH TUBES - APPLICABILITY IN THE CANADIAN CLIMATE

This project will investigate the available literature for evidence regarding the performance of residential earth tube ventilation systems. The aim is to determine the extent to which information is available that can validate or dispel whether or not earth tubes are a good option for reducing ventilation related energy use in houses in northern climates and under what conditions this may be the case. There are concerns that earth tubes do not save significant energy and may represent an indoor air quality concern if adverse conditions arise in the buried duct system. Depending on the information found and its relevance to Canadian climate conditions, the necessity for more research on the topic will be determined.

CMHC Project Officer : Ken Ruest
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 39710200
STATUS : Ongoing

EQUILIBRIUM™ COMMUNITY DEMONSTRATION INITIATIVE

EQuilbrium™ Communities is a four-year, $4.2M collaborative sustainable community demonstration initiative of CMHC and NRCan under the ecoACTION umbrella. The objective is to accelerate sustainable community development in Canada through demonstration of sustainable planning and development at the neighbourhood scale. The initiative will provide financial assistance for technical activities and showcase the performance of neighbourhood development projects which, through their planning, design, implementation and operation, will provide measurable improvements over traditional approaches.
Http://www.cmhc-schl.gc.ca/en/inpr/su/eqsucoin/index.cfm

CMHC Project Officer : *Susan Fisher*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 39550200
STATUS : Ongoing

NSERC CANADIAN UNIVERSITY NETWORK ON "SOLAR ENERGY UTILIZATION IN BUILDINGS"

CMHC is supporting a new Natural Sciences and Engineering Research Council of Canada (NSERC) funded University Network on "Solar Energy Utilization in Buildings", to achieve the objective of enhancing the capacity of the residential industry to develop solar buildings with substantially reduced purchased energy needs. The overall vision of the Network over its five year period will be to advance the adoption of new knowledge, tools, practices and technologies for cost effective construction of solar zero-net-energy buildings in Canada. The main objectives of the Network over its five-year research program are the following:

1. To develop effective techniques for integration of solar collection, storage and utilization systems in the building envelope.
2. To develop and improve solar energy utilization technologies so as to reduce cost and raise overall efficiency.
3. To develop and demonstrate affordable, reliable, building integrated, distributed power generation systems based on solar energy for residential and commercial buildings.
4. To develop simulation design tools and methodology that may be effectively utilized throughout the design process.
5. To transfer these outputs to the end users.
6. To contribute to the development of government policies and programs aimed at fostering the adoption of solar technologies in buildings.

CMHC will seek opportunities to transfer the knowledge gained through the network research to stakeholders in the housing industry.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 34020200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PAYBACK PERIOD FOR "GREEN" BUILDING FEATURES IN SINGLE FAMILY DETACHED DWELLINGS

This project built a framework to profile the attributes of various "green" building features available for single family detached dwellings and to estimate the payback periods of different green features . Generic green features were profiled to increase the understanding of consumers, and industry, of the costs and benefits of "building green" in the single family market. The initial 5 to 10 green building feature profiles will be published to enable consumers and the home building industry to objectively evaluate "green" features that they wish to incorporate into their homes.

CMHC Project Officer : *Woytek Kujawski* ***CIDN*** : 38320200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

REGIONAL PILOT DEMONSTRATION OF NET ZERO ENERGY HEALTHY HOUSING

This project involves the development of a national net zero energy healthy housing demonstration and implementation initiative through an industry partnership to advance new Canadian housing towards a net zero energy consumption and low environmental impact goal. The concept involves the design, construction, demonstration and monitoring of net zero energy healthy houses in a project called the EQuilibrium™ Sustainable Housing Demonstration Initiative. To date, a total of fifteen projects from across the country have been selected in two separate national competition calls. Construction has been completed on 7 projects with the rest expected to follow in the next two years. All constructed EQuilibrium™ projects will be open for public and professional tours for a minimum time period of six months. Demonstrations will permit the EQuilibrium™ Teams to show their achievements to the residential building industry and consumers. Upon completion of the demonstrations, the houses will be sold and CMHC will monitor the performance of the houses for one year post occupancy. Based on the outcome of this demonstration initiative, CMHC will explore with its partners and stakeholders opportunities to expand this initiative more broadly across Canada. The EQuilibrium™ Sustainable Housing Demonstration Initiative is based on CMHC's five principles for Healthy Housing (Health, Energy, Resources, Environment, and Affordability). It combines passive solar, energy efficient design, construction and appliances, with commercially available grid tied renewable energy systems to achieve net zero energy consumption on an annual basis, reduced green house gas (GHG) emissions, and low environmental impact. The intended results and impacts of the EQuilibriumTM initiative are to develop strategic alliances between industry and government to reduce the energy intensity of our housing sector, mitigate household energy cost increases in the medium term, foster a growing renewable energy and sustainable housing industry in Canada, increase consumer awareness and demand for sustainable housing, and support Canada's goal of reducing pollutant and GHG emissions. The development of the EQuilibrium™ initiative in Canada will also help to ensure Canada's inclusion in competitive international housing markets and our next generation of value added exports. Detailed information on the EQuilibrium™ Initiative and each of the projects is available on the CMHC web site www.cmhc.ca.

CMHC Project Officer : *Thomas Green* ***CIDN*** : 35490200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is available on the web

SPECIFICATION OF INDICATORS AND SELECTION METHODOLOGY FOR THE EQUILIBRIUM™ DEMONSTRATION COMMUNITIES INITIATIVE

This project will specify the criteria and indicators of sustainability most relevant to EQuilibrium™ Communities and an evaluation methodology for selecting, measuring and monitoring demonstration initiative projects. This commitment represents the first steps of a multi year EQuilibrium™ Community Demonstration project to be implemented in collaboration with NRCan. Subsequent commitments will be developed for demonstration project selection process management, technical support, project reporting, etc. within the overall EQuilibrium™ Initiative.

STATUS : Completed

AVAILABILITY : There will be no product for this project

SUPPORT FOR THE DEVELOPMENT OF A TECHNOLOGY ROADMAP (TRM) FOR SUSTAINABLE HOUSING IN CANADA

Canada Mortgage and Housing Corporation (CMHC), in partnership with Industry Canada (IC) and Natural Resources Canada (NRCan), will support the development of a Technology Roadmap (TRM) for Sustainable Housing. The TRM will be used to focus industry and government resources on realizing opportunities for, and addressing challenges to, sustainable housing. The TRM will be developed through industry consultations and the organization of industry working groups that will identify key areas of work and possible pathways forward.

CMHC Project Officer : *Duncan Hill*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 37670200

STATUS : Ongoing

SUPPORT FOR THE GREENING OF THE CÔTEAU VERT PROJECT

This research project is documenting the development of a new green affordable housing development - Côteau Vert in Montreal, Quebec. The study will provide information on the process that the development team took to assess, prioritize and ultimately select green products, equipment, systems and practices to be included in the buildings. This includes an analysis of the related costs, benefits and implementation/operational considerations. Quality assurance, commissioning and monitoring protocols will be developed to support the implementation of the innovative features. This research project will provide information for the residential construction industry on one development team's experience regarding the selection and implementation of green building features and technologies in the design of an affordable multi-unit residential building project.

CMHC Project Officer : *Woytek Kujawski*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 37560200

STATUS : Ongoing

SURVEY OF REGULATORY BARRIERS TO SUSTAINABLE HOUSING

This project will assess the extent of regulatory barriers faced by the first EQuilibrium™ design-build teams in the design and construction of their sustainable housing projects. This will provide CMHC with an opportunity to assess regulatory barriers to real, and very recent, sustainable housing projects. The outcome of this work will enable CMHC to better support the

next generation of EQuilibrium™ housing and other sustainable housing efforts, contribute to improving residential building standards and construction practices, and support the federal government's environmental agenda.

CMHC Project Officer : *Douglas Rowland* ***CIDN*** : 40220200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUSTAINABLE BUILDING ENVELOPE RETROFITS FOR EXISTING HOUSES

This project will develop fact sheets on energy and cost-effective strategies to improve the performance of the building envelopes of existing houses and increase awareness of the cost and environmental impacts of these improvements. The fact sheets will include generic information about materials and components used in building envelopes, and detailed information about installation and connection of materials and components to ensure optimal performance. The fact sheets will illustrate different strategies to improve walls, foundations, openings and penetrations and compare the estimated costs and energy savings of each. Best practice details (from CMHC guides) will illustrate and explain critical construction procedures and concerns. The fact sheets will contain references to useful information and services, such as CMHC publications and the ecoENERGY program. They will contain information about recycling and disposal of construction materials and their effects on the environment, and will increase the reader's awareness of the environmental impact of changes to their houses, and the ways to achieve the best energy efficiency and durability for the least expense. A consultant with substantial knowledge of Canadian wood-frame construction and sustainable housing has been engaged to review literature on the subject and adapt CMHC best practices to address energy efficient building envelope retrofits.

CMHC Project Officer : *Barry Craig* ***CIDN*** : 38340200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

UPDATE OF PRACTICES FOR SUSTAINABLE COMMUNITIES

This phased project will revise and update CMHC's publication, "Practices for Sustainable Communities". The project will be carried out in two phases. Phase One will determine the appropriate revisions that will reflect current trends and best practices and address the needs and interest of municipalities and developers and builders, including determining the scope, organization and structure, content and format. The information resource will be updated in Phase Two.

CMHC Project Officer : *Cynthia Rattle* ***CIDN*** : 39570200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: SUSTAINABLE BUILDING SCIENCE BEST PRACTICES, p. 21
SUSTAINABLE HOUSING IN THE NORTH, p. 38
Socio-economic research on Sustainable Development & Healthy Housing, p. 59-61

COMPARISON OF PERFORMANCE OF FOUR PRESSURIZED, SOIL-BASED DISPERSAL SYSTEMS AT AN AT-GRADE INSTALLATION IN LEDUC COUNTY, ALBERTA

Pressurized, at-grade, private sewage treatments have a great potential of being used in Alberta but the designs of these systems have to address the issues of point loading, high loading rates, instantaneous saturated flow, uneven application of effluent over the length of the laterals, and movement of total and fecal coliforms and nitrate-N to a depth of 60 cm and beyond. An at-grade installation was established at a residence in Leduc County, Alberta in the fall of 2007 to test treatment effectiveness of four designs for dispersing treated sewage effluent in soil.

This composite report has been prepared to document the following:

1. The establishment of an at-grade research site in Leduc County in the fall of 2007;
2. Report the results for: (i) above ground ambient temperature at a height of 20 cm above the soil surface for 2007-2008 and 2008-2009; and (ii) the minimum soil temperature for the control sites and at orifice and mid-point positions for four laterals at soil depths of 5, 20, 50 and 100 cm depths for the 2007-2008 and 2008-2009 seasons to assess whether the soil remained thawed over the winter months; and
3. Report the results of gravimetric moisture content, fecal coliforms, somatic coliphages, ammonium, nitrate and Kelowna P to a depth of 90 cm to determine the treatment effectiveness of four distinct soil-based dispersal systems.

This approach has been taken for the following purposes:

1. To ensure that a complete package of knowledge is available in a single document to facilitate further research at this research site; and
2. To clearly identify the work done for different agencies and to show how these data have been synthesized in order to address pressing issues of using soil based, at-grade wastewater dispersal systems in Alberta.

Final report submitted to Canada Mortgage and Housing Corporation, Alberta Municipal Affairs, and Leduc County, Alberta. Prepared by N. G. Juma, B. S. Chhabra, S. Khan, S. Singh, A. Durnie, and A. Chu. CMHC Project Officer: Cate Soroczan. Ottawa: Canada Mortgage and Housing Corporation, 2010. (External Research Program Report) 63 pages (1.36 MB)

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2010C56_web.pdf

EVALUATION OF WATER CONSERVATION PRACTICES

This research will provide municipalities with guidance in creating a cost effective water efficiency plan (WEP). The use of a standardized WEP will allow for practical and useful comparisons between water efficiency programs implemented across Canada. A template WEP will be developed to incorporate the variety of necessary parameters to be considered such as water source, population size and growth, regional socio-economic, climatic and geographic conditions, infrastructure status, target changes in water demands and wastewater flows, projected capital works and related costs, and cost/benefit. The WEP template will include a software database for creating a water efficiency plan plus a report documenting the key components of water efficient planning.

CMHC Project Officer : *Catherine Soroczan*
CIDN : 30550200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available
NEW

NEXT GENERATION WATER BALANCE MODEL

CMHC has supported the development of the Water Balance Model - an on-line decision support tool to evaluate the impact of land use planning and site design on stormwater runoff and watershed health. This project will review the newly updated Water Balance Model tool and then field test it on the Don Valley Watershed in order to determine its effectiveness as a modelling tool, its reporting capabilities, and general ease-of-use. Separate work will be undertaken to incorporate a module to account for onsite water reuse.

CMHC Project Officer : *Catherine Soroczan*
CIDN : 38400200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

DON RIVER WATERSHED SITE EVALUATION

In 2006, Toronto and Region Conservation Authority began the process of updating the science on the Don River Watershed and developing a new *Don River Watershed Plan.* The need for innovative stormwater management practices emerged as a key component of the recommendations from the new Don plan. Much of the watershed is already built up so the emphasis is on retrofitting existing communities with enhanced stormwater management. Stormwater source controls (also called low impact development measures) such as permeable pavement, bioswales, rain gardens, rainwater harvesting and downspout disconnection are recommended for private and public lands. As space and capital dollars for stormwater work are limited, creative solutions that achieve multiple objectives and integrate well with existing communities are needed.

To illustrate possible scenarios for implementing the watershed plan's recommendations at a local scale, five concept site plans were developed. The sites were chosen to be representative of common challenges faced in many locations throughout the watershed. The plans illustrated a suite of actions that could be implemented to achieve gains in water quality, water balance, erosion control, natural heritage protection and community engagement within the context of other sustainability elements. Three of the five site plans proposed significant stormwater source control activities.

As a part of a broader research initiative to support the development of a hydrologic modelling tool, CMHC provided research funding to apply the hydrologic model to the three sites to assess the outcomes of different residential developments and other measures on stormwater and how innovative practices can mitigate adverse environmental impacts of stormwater. The hydrologic modelling was used to estimate the potential reductions in peak flows (and associated flood risk and erosion potential) and overall flow volume that might result from implementing these measures.

Prepared by the Municipal Infrastructure Group Ltd. CMHC Project Officer: Cate Soroczan. Ottawa: Canada Mortgage and Housing Corporation, 2009. 47 pages

Note: No. 10-101 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 67087)

STATUS : New Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2009D56%20w.pdf

RAINWATER HARVESTING DESIGN MANUAL

Rainwater Harvesting (RWH) has been undertaken sporadically in Canada and has been recently allowed under some provincial codes. However, the lack of technical information on RWH is an impediment to wide scale adoption. Education and training on rainwater system design and installation practices are among the key issues to be addressed to help ensure rainwater harvesting systems are designed and installed properly and perform in a safe and effective manner in residential settings. Accordingly, this project will develop rainwater system design guide and training materials.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 39810200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUPPORT FOR INTERNATIONAL WATER ASSOCIATION 2010 WORLD WATER CONGRESS

CMHC will support two workshops at the International Water Association's (IWA) World Water Congress 2010 in Montréal. The first workshop will be part of a one day event on New Water. CMHC's half day agenda will showcase small scale residential water reuse with a focus on Canadian, North American current needs, technologies, and regulatory instruments. The second half day workshop will showcase water management issues for northern and remote communities. This international event will provide Canada and CMHC with an opportunity to showcase Canada's role in residential water research and technology, particularly in the areas of water reuse.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 39820200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUPPORT FOR NATIONAL ON-SITE WASTEWATER RESEARCH PROGRAM

CMHC in conjunction with the Canadian Water and Wastewater Association and the provincial on-site associations of Ontario, Alberta, and B.C. will work with national stakeholders across the country to address research and policy gaps in the area of decentralized wastewater management. The network will identify and prioritize all research and policy issues, and leverage funding to address these issues and communicate the results across the country. As a starting point, CMHC will support targeted research for the development of on-site wastewater technology verification and installation standards. To date CMHC has supported the Bureau du normalisation du Québec (BNQ) in the development of a national standard for on-site wastewater technology verification. The CAN/BNQ 3680-2009 Onsite Residential Wastewater Treatment Technologies standard is now available through the BNQ website. A second initiative will support the development of a national on-site wastewater installation standard through the Canadian Standards Association.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 35720200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is available

SUPPORT FOR THE CREATION OF A NATIONAL WATER REUSE PROGRAM

CMHC will work with stakeholders from various government levels, associations, private industry and research centres to establish a Canadian national residential water reuse research and development program of work. This program will address gaps including: policy needs, risk analysis, design standards, pricing strategies, technology performance criteria, enhanced pilot testing and technology demonstration, national guidelines and regulations and innovative technology support for export to developed markets. The first project under this program has been the development of a draft national water reuse guideline for toilet application. In July 2010, Health Canada posted the guideline "Canadian Guidelines for Domestic Reclaimed Water for Use in Toilet and Urinal Flushing" on its website
http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/reclaimed_water-eaux_recyclees/index-eng.php

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 35730200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

TESTING PROTOCOL FOR ALTERNATIVE RESIDENTIAL WASTEWATER TREATMENT

CMHC will work with the Canadian Standards Association (CSA) and partners from across Canada to develop a new standard for the evaluation of small scale water recycling, or reuse, systems. A rigorous technology verification standard will support the acceptance of water reuse by providing industry with a common standard to test their systems to and demonstrate compliance with. The standard will provide regulatory authorities with some assurance that compliant systems will perform and system designers with a performance reference when specifying alternative residential wastewater treatment systems.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 39830200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

WETLAND WASTEWATER TREATMENT FOR ISOLATED DWELLINGS

This project will evaluate the performance of two wetland treatment systems in reducing wastewater contaminants from isolated dwellings including the effects of freeze thaw on operation and performance. A pilot hybrid wetland will be built at the Ontario Rural Wastewater Centre. The Centre has also built a pilot septage reed bed filter system in Eastern Ontario. The project will consider hydraulic and organic loading rates of septage and holding tank wastes and the impacts of the vegetation on treatment as well as climatic effects (precipitation, temperature).

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 38420200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SOCIO ECONOMIC RESEARCH

ABORIGINAL HOUSEHOLD, HOUSING AND COMMUNITY CONDITIONS BASED ON THE 2001 ABORIGINAL PEOPLE'S SURVEY (APS) AND ABORIGINAL CHILDREN'S SURVEY

This study will profile housing and social conditions of Aboriginal people by distinct Aboriginal group (Status Indian, Métis, Inuit, and non-status Indian), looking at conditions on reserves and outside reserves. The research will examine relationships between housing conditions, household characteristics, and other socio-economic factors, including health status, education, labour activity, and income. Various indicators of housing conditions that are available through the APS and Census will be explored, including crowding, need for repair, water quality, features present in or absent from the home, and core housing need. Personal and household characteristics to be investigated include age, gender, education, disability status, mobility, and household type. Specific analyses will examine the relationship between educational performance of Aboriginal children and their housing conditions and the relationship of health to housing conditions.

CMHC Project Officer : *Candace A Fedoruk* ***CIDN*** : 3576 0200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ABORIGINAL HOUSEHOLD, HOUSING AND COMMUNITY CONDITIONS BASED ON THE ABORIGINAL PEOPLE'S SURVEY (APS)

The consultant hired for this project completed consultations with stakeholders both internal and external to CMHC, including all National Aboriginal Organizations (NAOs) and developed an analysis plan and an assessment of data requirements in preparation for the analysis of custom data linking Statistics Canada's post-censal Aboriginal People's Survey (APS) to CMHC's custom 2001 Census-based housing conditions indicators. The resulting custom data is being analysed and applied to the research issues (using the analysis plan developed through the consultation process). The 2001 APS is the single most comprehensive source of information on household, housing and community conditions faced by Canada's Aboriginal Peoples. As the research is completed, research findings will be published via research reports/highlights and at the end it is planned that an electronic data base specific to Aboriginal housing conditions will be developed and released.

CMHC Project Officer : *Ian Melzer* ***CIDN*** : 35760200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CASE STUDIES OF THE CRITICAL PRECONDITIONS FOR ACHIEVING MARKET-BASED APPROACHES TO HOUSING IN FIRST NATION COMMUNITIES

This project consists of eight case studies of First Nation communities that have an established housing system with market characteristics. The studies will identify for each community the necessary and sufficient condition that enabled the market-like system to be implemented or to evolve. The findings from each community will be compared with each other to highlight commonalities and unique solutions and will also be discussed in the light of certain homeownership initiatives on tribal trust lands in the US.

CMHC Project Officer : *Antoine Pomerleau* ***CIDN*** : 36800200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ABORIGINAL HOUSING

SMALL FOOTPRINTS ON UNBROKEN LAND / HEALING BROKEN LAND

The project will contribute professional advice and services towards a new First Nation development project located on wild unbroken land in coastal BC and / or on previously used industrial or agricultural broken land. Starting with planning workshops and the development of a community plan, then moving towards establishing a renewable energy platform based on a business plan that establishes a continuous revenue stream, a sustainable development strategy and design solution will be produced for housing construction under Section 95 funding and other recently announced programs to produce 150± homes over 5 years. This will be combined with infrastructure funding from Indian and Northern Affairs Canada, Western Economic Diversification Canada, Natural Resources Canada and Human Resources and Social Development Canada. This project will produce a practical demonstration of sustainable planning, design and development models for rural and remote communities elsewhere in Canada. Fully planned and developed communities, complete with renewable energy systems, road, water, waste water and other essential infrastructure, will occur in several First Nation locations. Development models will be produced that encourage incorporation of sustainability principles and that are built upon economic development and capacity building. The ultimate outcome is 100-150 new homes built by community members in a community planned by the community through workshops and design charrettes.

CMHC Project Officer : *Allan Dobie* ***CIDN*** : 35290200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUSTAINABLE HOUSING IN THE NORTH

This research was undertaken to produce a user-friendly plain language research report that provides a background of "northern" (North of 60) housing in Canada, identifies the types of challenges encountered in northern housing in Aboriginal (Inuit, First Nations, Métis) communities and provides best practice examples of sustainable housing (durable, affordable in construction through use of local materials when possible and in maintenance through provision of energy, water and waste water management at a manageable cost). In addition, the report examined sustainable housing components that have proven to be successful in Canada, and in northern countries that have geographic, climatic and resource challenges similar to those in northern Canada and which may be used, or adapted for use, in Canada. The project is complete and the report is being prepared.

CMHC Project Officer : *William Semple* ***CIDN*** : 32740200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: RETROFITTING CRAWL SPACES - FIRST NATIONS DEMONSTRATION, p. 9

CHILDREN S ENVIRONMENTS

HOUSING, NEIGHBOURHOODS AND CANADIAN CHILDREN'S HEALTH OUTCOMES

This External Research Project will use Cycles 1 to 5 of the National Longitudinal Survey of Children and Youth (NLSCY) to examine whether and how much a family's housing choices (owned home, unassisted rental, assisted housing; single family, row housing, etc.) affect child health outcomes. The research will seek to identify which housing and neighbourhood characteristics associated with home ownership, rental, assisted housing and/or type of housing have impacts on health outcomes, and which do not, and how these characteristics interact with housing choices to affect child health outcomes.

CHILDREN S ENVIRONMENTS

CMHC Project Officer : *Mark Holzman* ***CIDN*** : 36260205
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ROLE OF AFFORDABLE HOUSING IN THE WELL-BEING OF CHILDREN: AN EXPLORATORY LONGITUDINAL STUDY

The purpose of this External Research Program study is to develop a feasible and methodologically rigorous longitudinal research strategy that will be used to conduct a multi-city study to understand how the receipt of affordable rental or home ownership housing through the Affordable Housing Program impacts children's development and well-being. The second objective is to pre-test the developed research strategy by conducting a small-scale pilot study. The findings from the pilot will provide useful preliminary data on the impact of affordable housing on the well-being of children, particularly outcomes related to educational attainment. The findings will also be used to further refine the developed research methodology.

CMHC Project Officer : *Ian Melzer* ***CIDN*** : 38840202
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CITY PLANNING AND HUMAN SETTLEMENTS

COMPARING CANADIAN NEW URBANIST AND CONVENTIONAL SUBURBAN NEIGHBOURHOODS: FINAL REPORT

This study explores travel and social behaviour differences between selected new urbanist and conventional suburban neighbourhoods in Canada. The four new urbanist developments selected for this study were: Bois Franc in Montréal, Cornell in Markham, Garrison Woods and McKenzie Towne in Calgary. The analysis compares the eight neighbourhoods' urban design characteristics including: access to daily destinations, pedestrian routes and connectivity, housing choice and density. Through an extensive occupant survey, the analysis also compares their behaviours, attitudes and perceptions, including: car use for weekday urban travel; walking and biking, use of public transit, resident satisfaction with neighbourhood design, use of public open space, social interaction with neighbours and sense of neighbourhood attachment.

Prepared by Ray Tomalty (Smart Cities Research Services) and Murtaza Haider (Regionomics) with the assistance of Craig Alleva … et al. CMHC Project Officer: Susan Fisher. Ottawa: Canada Mortgage and Housing Corporation, 2009. 136 pages (3.41 MB)

Note: No. 10-003 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 66954)

STATUS : New Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2009C52_w.pdf

CITY PLANNING AND HUMAN SETTLEMENTS

HEAT ISLAND MITIGATION MEASURES

There is little or no mention of the issue of heat islands in development practices, community plans or planning regulations. The main objective is to develop a practical design guide to help municipalities manage and address heat island problems, by analyzing Montréal and Toronto.

CMHC Project Officer : *Woytek Kujawski*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 41330201
STATUS : Ongoing
NEW

COOPERATIVE AND NON-PROFIT HOUSING

GOVERNANCE CHALLENGES IN NON-PROFIT HOUSING ORGANIZATIONS

This project focuses on gaining a better understanding of the organizational and operational challenges facing board members and managers of non-profit housing organizations in Quebec. The research examines management strategies that the boards of directors and managers are adopting in the face of increasingly complex financial, maintenance, and support services arrangements. Further, the research looks at factors that motivate individuals to serve on the boards, and it examines the ways in which management succession affects the operation of the organizations.

CMHC Project Officer : *Hoda Shawki*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 38840204
STATUS : Ongoing

UPDATING "YOUR GUIDE TO RENTING A HOME" AND "GUIDE TO CO-OP HOUSING"

This project will provide for updating of the substantive content of CMHC's online rental guide ("Your Guide to Renting a Home") annually, and of CMHC's online "Guide to Co-operative Housing" every second year; of the live links contained in these guides every four months, and of the non-link information contained in these guides annually. It will also provide for the handling of enquiries as received and the potential addition of new sections to the guides.

CMHC Project Officer : *Jim Zamprelli*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 39660200
STATUS : Ongoing

NEXT STEPS: EVALUATING TRANSITIONAL HOUSING FOR THE HOMELESS

This External Research Program study seeks to provide information that can determine the role that transitional shelters can play in the continuum of responses to homelessness. The research will assess the effectiveness of the Next Steps Transitional Shelter program in Victoria, British Columbia; will analyze individual outcomes through a macro-policy lens focused on adequacy of income, housing availability, access to health services, and social inclusion and supports; and will review the effectiveness of integrating research with a service provider's intake and exit processes.

CMHC Project Officer : *Hoda Shawki*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 40140213
STATUS : Ongoing

ROLE OF PUBLIC HEALTH INSPECTORS IN MAINTAINING HOUSING IN NORTHERN AND RURAL COMMUNITIES

Homelessness remains a major social and health issue in northern and rural communities in part because it remains hidden from the 'public' eye. Various structural elements work towards making homelessness hidden including: no local temporary housing or shelters, rural poverty, a pattern of frequent moves by homeless people among family or friends, and relocation of vulnerable persons to urban areas for services. For public health inspectors, however, the housing conditions of the precariously housed are very visible. The purpose of this External Research Program study is to better understand the role of northern and rural public health inspectors in maintaining housing stock in accordance with health standards and how northern and rural housing challenges are addressed by public health inspectors.

CMHC Project Officer : *Hoda Shawki*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 40140208
STATUS : Ongoing

USING PHOTOVOICE TO EVALUATE THE IMPLEMENTATION OF SUPPORTIVE HOUSING IN OTTAWA

Photovoice is a participatory action research method that combines photography with other forms of qualitative data collected from interviews, focus groups, or writings. This External Research Program study will use photovoice in the evaluation of eight supportive housing agencies that form the Ottawa Supportive Housing Network (OSHN). The research will develop methods for evaluating the implementation of supportive housing by network members using photovoice, will use photovoice to evaluate the implementation of the participating programs, and will assess the value of photovoice as a program evaluation method.

CMHC Project Officer : *Hoda Shawki*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 40140211
STATUS : Ongoing

HOUSE CONSTRUCTION INDUSTRY

MEASURING THE EMPLOYMENT EFFECTS OF RESIDENTIAL CONSTRUCTION AND RENOVATION

The project will build upon earlier research and enhance CMHC's and the housing industry's understandings of the magnitude of the contribution that the residential construction sector makes to employment in the Canadian economy.

CMHC Project Officer : *Michel Laurence* ***CIDN*** : 39861000
Division : Market Analysis Centre ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING

VIRTUAL SHOWCASE OF HOUSING IN CANADA

This project will assess the viability and options for the creation of a virtual showcase of exemplary housing projects in Canada. This showcase is expected to provide a forum to post leading edge projects which meet pre-set criteria for innovation and quality in a format that facilitates easy comparison.

CMHC Project Officer : *Douglas B Pollard* ***CIDN*** : 36500200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : There will be no product for this project

HOUSING AFFORDABILITY

ACTION RESEARCH ON TRANSPORTATION AND HOUSING AFFORDABILITY

The question driving this External Research Program project is what is the potential for increasing housing choice and affordability in large Canadian cities through the application of sustainable transportation policy? The main goal of the research is to identify municipal transportation policies with the potential for the most positive impact on housing choice and affordability.

CMHC Project Officer : *Meg Ogden* ***CIDN*** : 38840209
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

AFFORDABLE HOUSING FOR FAMILIES: ASSESSING THE OUTCOMES: FINAL REPORT

The Affordable Housing for Families: Assessing the Outcomes study examines the shelter and non-shelter outcomes for families who have moved into social housing in the Metro Vancouver and Okanagan regions of BC between July 2004 and June 2006. A literature review reveals that while positive housing impacts such as increased affordability, suitability and adequacy of housing have been demonstrated, fewer studies exist on the non-shelter impacts of such a move. There is a particular dearth of studies examining the before and after circumstances of families' move into social housing. The Affordable Housing for Families study addresses this gap by interviewing 85 household heads with children under 19 who have moved into social housing in Metro Vancouver or the Okanagan within the past two years, and identifies the changes these families have experienced. Interviews with housing providers and key informants were also conducted.

The study concludes that families experience significant improvements to their situation as a result of moving into social housing. Most (but not all) are better off financially. Most household heads and family members are healthier due to better nutrition, reduced levels of stress and increased access to physical exercise opportunities. Children tend to do better in school. Many families find a strong sense of community in their new neighbourhood, and more are engaged in community and volunteer activities in the management of their social housing complex. Contributing factors to these outcomes are explored, and conclusions and key findings are presented, as well as suggestions for further study.

Prepared by Margaret Condon, Nick Istvanffy, Robyn Newton and Bev Pitman. CMHC Project Officer: Ed Nera. Ottawa: Canada Mortgage and Housing Corporation, 2010. (External Research Program Report) 125 pages (849 KB)

Note: No. 10-007 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 67033)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2010A23_w.pdf

ESSENTIAL SERVICE WORKERS AND HOUSING AFFORDABILITY

This project will develop an overview of mechanisms through which governments in the United States, the United Kingdom, Ireland, Australia, and selected OECD countries determine the degree to which housing is affordable for essential service workers, as well as an overview of affordable housing programs for such workers in these countries. It will also identify strategies which proved to be especially effective and successful in the context of these programs.

CMHC Project Officer : *Hoda Shawki*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 39650200#

STATUS : Ongoing

HOUSING AFFORDABILITY

STATE OF MUNICIPAL HOUSING ACTIVITY IN METRO VANCOUVER: AFFORDABILITY AND DIVERSITY

This research will answer the question: To what extent are municipalities in Metro Vancouver taking steps to address housing affordability and diversity in their communities? The project will document the extent to which municipalities in Metro Vancouver are adopting and implementing measures laid out in the Metro Vancouver Affordable Housing Strategy (2007) to address issues of housing affordability and diversity. It will also create a resource that can be used by Metro Vancouver municipalities and others to learn what actions municipalities have taken to promote housing affordability and diversity.

CMHC Project Officer : *Hoda Shawki* — ***CIDN*** : 41330203
Division : External Research Program — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

HOUSING AND IMMIGRATION

COHORT PROGRESS TOWARD HOUSEHOLD FORMATION AND HOMEOWNERSHIP: A COMPARISON OF IMMIGRANT VISIBLE MINORITY GROUPS IN LOS ANGELES AND TORONTO

Homeownership is closely tied to neighbourhood quality, residential stability, public safety, and numerous other positive outcomes. Additionally, it reflects access to suitable and appropriate housing, so understanding what shapes access to housing – and differences in access between population sub-groups – is of vital importance. This is particularly true when access begins to slip for some, as it has for certain immigrant visible minority groups in recent Canadian and American history. It could be said that there now exists a 'hierarchy' of access to owner-occupied housing in both countries. This External Research Program project will determine how robust the homeownership hierarchies of Canada and the United States are to different units of analysis.

CMHC Project Officer : *Richard Gabay* — ***CIDN*** : 41330202
Division : External Research Program — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

GHANAIAN AND SOMALI IMMIGRANTS IN TORONTO'S RENTAL MARKET: A COMPARATIVE CULTURAL OVERVIEW OF HOUSING PROBLEMS AND COPING STRATEGIES

This External Research Program study seeks to identify the housing problems faced by Ghanaians and Somalis in the Toronto rental market, and, more importantly, examine the coping strategies deployed by these immigrants to address these challenges. The extent to which these immigrants' culture impacts their housing problems and coping strategies will also be analyzed, as well as the institutional context in which they address their housing problems.

CMHC Project Officer : *Jim Zamprelli* — ***CIDN*** : 41330206
Division : External Research Program — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

HOUSING AND IMMIGRATION

MOBILITY EXPERIENCES OF IMMIGRANTS AND THE CANADIAN BORN AND HOMEOWNERSHIP

This External Research Program project aims to answer two key research questions. First, do immigrants relocate in Canada more than the Canadian born and if so, at what geographic levels? Second, among immigrants and the Canadian born who relocate, for whom is it more likely to end in homeownership?

CMHC Project Officer : *Richard Gabay*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 38840210
STATUS : Ongoing

HOUSING EXPORT OPPORTUNITIES

CAPACITY STUDY OF THE CANADIAN PREFABRICATED PANEL MANUFACTURING INDUSTRY

This study will provide a lexicon of successful export behaviours in the manufactured housing industry and rank them in terms of their importance in achieving successful business. Each will then be described in detail and suggestions offered as to how they may be better disseminated among manufacturers. An estimate of the actual capacity of the Canadian industry able to provide the level of service necessary will also be made. The successful contractor is to identify specific packages of training and technology transfer which can enable these and other companies to achieve success abroad.

CMHC Project Officer : *Oliver Drerup*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 39970900
STATUS : Ongoing

CASE STUDY FOR THE INTEGRATION OF TECHNICAL, REGULATORY AND COMMERCIAL, SUPPORT FOR HEAT RECOVERY VENTILATORS IN THE UK/IRELAND MARKETS

This project seeks to improve the Canadian heat recovery ventilator (HRV) industry's understanding of the technical, regulatory and commercial challenges to UK/Ireland market penetration and expansion. It will endeavor to increase the number of Canadian HRV manufacturers in possession of U.K. and/or EU regulatory approvals, which will lead to increased sales of Canadian HRVs to the U.K/Ireland and increased Canadian content of Super E housing system exports.

CMHC Project Officer : *Terry Robinson*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 38780900
STATUS : Ongoing

EVALUATION OF COMMERCIAL OPPORTUNITIES FOR CANADIAN HOUSING EXPORTERS GIVEN CURRENT MARKET REALITIES IN THE UK

The purpose of this project is to undertake a critical re-evaluation of the price competitiveness of the Canadian offering, both Super-E and conventional prefabricated housing in the UK market, along with detailed market segmentation intelligence to better identify the real opportunities to re-position the Canadian offering and capitalize on market demand going forward.

CMHC Project Officer : *Iromi C Amit* ***CIDN*** : 37960900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING MARKET ASSESSMENT IN CENTRAL AMERICA AND THE CARIBBEAN

The purpose of this project is to provide an assessment of the housing market in Central America and the Caribbean (strengths and weaknesses) in order to explore potential business opportunities for Canadian housing and finance industry participation in those regions.

CMHC Project Officer : *Terry Robinson* ***CIDN*** : 37920900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MARKET INTELLIGENCE ON NEW ENGLAND HOUSING MARKET

CMHC will support Canadian manufacturers with updated market information and intelligence on the Maine housing market by conducting market research specifically on (1) market needs for products that meet the LEED requirements; (2) trends and preferences including product specifications; and (3) changes in relation to NAFTA and cross-border issues. Market information on Maine will be disseminated to Canadian companies.

CMHC Project Officer : *Ronald Drisdelle* ***CIDN*** : 38490900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

REGULATORY SUPPORT FOR WINDOWS IN THE U.K./IRELAND

This project seeks to improve the Canadian wood window industry's understanding of the technical, regulatory and commercial challenges to UK market penetration and expansion. It will endeavor to increase the number of Canadian window manufacturers in possession of U.K. and/or EU regulatory approvals, which will lead to increased sales of Canadian windows to the U.K. and increased Canadian content of Super E housing system exports.

CMHC Project Officer : *Terry Robinson* ***CIDN*** : 38740900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RESEARCH ON BUSINESS OPPORTUNITIES IN CHINA - PHASE II

The purpose of this project is to identify and document business opportunities in China and match them with Canadian manufacturers.

CMHC Project Officer : *Tulio Conejeros* ***CIDN*** : 38510900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RESEARCH ON EMERGING MARKETS FOR CANADIAN PRODUCTS & SERVICES

The purpose of this project is to report on which countries/areas in the Gulf Cooperation Council, Middle East offer potential export opportunities for Canadian product manufacturers and service providers.

CMHC Project Officer : *Brian Eames* ***CIDN*** : 39950900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RESEARCH ON INNOVATIVE/GREEN/NICHE PRODUCTS IN THE U.K.

The purpose of this project is to identify buyers, builders, merchants, distributors and wholesalers in the United Kingdom potentially interested in Canadian housing products, focusing on innovative, green and niche products.

CMHC Project Officer : *Terry Robinson* ***CIDN*** : 38540900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RESEARCH ON STRATEGIES WITH U.S. BUILDERS AND DISTRIBUTION CHANNELS

The purpose of this project is to develop market intelligence reports for specific green building products and U.S. regions, which will help Canadian manufacturers identify opportunities and gain market access and thereby increase the sale of Canadian products to the U.S.

CMHC Project Officer : *Terry Robinson* ***CIDN*** : 38560900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RESEARCH ON THE RELATIONSHIPS BETWEEN U.S. BUYERS AND CANADIAN SELLERS

The purpose of this project is to gather market intelligence on U.S. buyers of green building products that will help Canadian manufacturers identify and gain market access, and promote awareness and acceptance of Canadian green building products.

CMHC Project Officer : *Terry Robinson* ***CIDN*** : 38570900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RUSSIAN HOME CONSTRUCTION PRODUCT MARKET

The objectives of this study were to:

- Analyze the Russian housing and construction market by looking at:
  - o the general economic and business environment; and
  - o the construction sector and housing market.
- Identify and analyze housing materials supplied by Canadian manufacturers that are likely to have a high potential on the Russian market.

The methodology used to gather the information was desk-research, PMR ready-made reports, and primary interviews. In total, approximately 90 companies were contacted, and interviews with market experts were conducted, in Russian.

Prepared by PMR Consulting. CMHC Project Officer: Rodney Neander. Ottawa: Canada Mortgage and Housing Corporation, 2010. 58 pages (542.35 KB)

Nota : Disponible aussi en français sous le titre : Le marché russe de la construction domiciliaire

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/Ca1%20MH%2010R73_web.pdf

SUPER E PARTNERSHIP IN U.K./IRELAND

This project is a partnership between CMHC and NRCan to assist Canadian housing system suppliers construct homes with high Canadian content that meet stringent performance requirements in the UK/Ireland. CMHC's contribution is directed towards seminars, training for members in the UK/Ireland and Canada, annual Super E member forums, support with project development, quality assurance, testing and trouble shooting. NRCan produces an annual report on the Program's accomplishments.

CMHC Project Officer : *Brian Eames* ***CIDN*** : 38760900
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING EXPORT OPPORTUNITIES

SUPER E PROGRAM IN FOREIGN MARKETS

The project will contribute to the activities of the Energy Efficient Exporters' Alliance (EEEA) in assisting Canadian housing system suppliers to construct energy efficient, healthy homes with high Canadian content in foreign markets. CMHC's contribution is directed towards seminars, training for members, annual Super E member forums, support for project development, quality assurance, testing and trouble shooting.

CMHC Project Officer : *Brian Eames*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 40070900
STATUS : Ongoing

HOUSING FINANCE

MORTGAGE MARKET INFORMATION FOR CONSUMERS

This project investigates what is being done domestically and internationally in order to help consumers obtain mortgage market information. Access to mortgage market information can help consumers obtain low-cost housing finance and promote efficiency in the primary mortgage market.

CMHC Project Officer : *Steven Ehrlich*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 38010200
STATUS : Ongoing

SURVEY OF ISSUES AND CHALLENGES TO PROVIDING MARKET HOUSING FINANCE IN THE NORTHERN TERRITORIES

The goal of this research project is to identify and examine gaps and issues, if any, related to mortgage financing and other issues impeding the financing of market housing in the North. The research will focus on housing financing in the North by examining the issues faced by:
a) lenders in providing mortgage financing for homeowners and private rental housing; and
b) individual home-buyers and rental developers in obtaining mortgage loans.

The research will also consider the effects of non-market housing activities (e.g. social housing, territorial government staff housing, and industry-provided worker housing) on housing finance and the growth of market-based housing as it relates to the above-mentioned research focus.

CMHC Project Officer : *Elliot Rodger*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 39590200
STATUS : Ongoing

HOUSING FINANCE

UPDATING CMHC'S ON-LINE "CONDOMINIUM BUYERS' GUIDE"

This project will update CMHC existing "Condominium Buyers' Guide", and extend it by adding provincial and territorial fact sheets (analogous to those in "Your Guide to Renting a Home") since condominium legislation and regulations are made at the provincial /territorial level of government, and by providing the substantive input necessary to convert the resulting guide to a true on-line guide with links to other on-line sources of information (e.g. from provincial /territorial governments and non-governmental organizations).

CMHC Project Officer : *Jim Zamprelli* — ***CIDN*** : 40380200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING INDICATORS AND DATA

CANADIAN HOUSING OBSERVER 2010

The "Canadian Housing Observer" is a flagship CMHC publication which provides comprehensive and authoritative reporting on the state of Canada's housing. The Observer is published annually, and is available in print and electronic formats. The analysis presented in the Observer, coupled with the extensive on-line data resources, provides Canada's housing sector with an indispensable tool for identifying, monitoring and addressing housing trends and issues.

CMHC Project Officer : *Sandra Baynes* — ***CIDN*** : 40090200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

LOCATION AND GASOLINE PRICE AS COFACTORS IN HOME PRICES

This External Research Program project will assess the possible impacts of changes in gasoline price on home prices in parts of the Toronto and Vancouver regions and discuss the assessment. The hypothesis to be tested is that high or rising gasoline prices enhance the price of centrally located homes in these urban regions in comparison with homes that are less centrally located (and vice versa: low or falling gasoline prices have the opposite effect).

CMHC Project Officer : *Susan Fisher* — ***CIDN*** : 40140214
Division : External Research Program — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MODÈLE D'ESTIMATION SÉPARÉE DES PRIX DU TERRAIN ET DU BÂTIMENT : RAPPORT FINAL

Most property prices observed on the market include both the price of the land and the price of the building. This External Research Program project explores the question of how to determine the contribution of each of these two components to the total transaction price. The research aims to develop a model for the disaggregation of the total price of a property between its land and building components.

Prepared by Ünsal Özdilek. CMHC Project Manager: Hoda Shawki. Ottawa: Ottawa: Canada Mortgage and Housing Corporation, 2010. (External Research Program Report) xi, 36 pages (765.56 KB)

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/fr_unilingue/Modele%20d'estimationCa1_MH_09M52_W.pdf

OVERVIEW OF THE CURRENT STATE OF KNOWLEDGE ON SOCIETAL OUTCOMES OF HOUSING: DRAFT PHASE II RESEARCH REPORT: ASSESSING THE SOCIETAL OUTCOMES OF HOUSING IN CANADA: AVENUES FOR FUTURE RESEARCH

The objective of this research project was to assess the current state of knowledge regarding linkages between housing and broader societal outcomes, specifically non-housing outcomes related to education, skills development and employment.

A literature review was conducted to assess the current state of knowledge, identify data gaps, examine related methodological challenges and identify future research challenges. The research aimed to address the following questions:

- What is the current conceptual thinking on how housing affects societal outcomes related to education, skills development and employment? How can these be measured and what challenges exist?
- What perspectives exist regarding vulnerable groups with distinct housing needs?
- What are the strengths and weaknesses of the various methodological approaches used to identify, quantify and attribute societal outcomes?

Prepared by SHS Consulting. Consultant: Ed Starr. CMHC Project Officer: Ed Nera. Ottawa: Canada Mortgage and Housing Corporation, 2009.

Note: No. 10-001 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 66751)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2009081_(W).pdf

ECONOMIC QUANTIFICATION OF THE "SOFT" BENEFITS OF GREEN INFRASTRUCTURE

This External Research Program project is focused on the following question: How can we value the "soft" (difficult to quantify) benefits associated with various types of green infrastructure? The objectives of the study are as follows:-- determine the full range of soft benefits associated with green infrastructure;-- identify the key benefits that are the most feasible to quantify;-- explore evaluation methodologies for each of the key benefits; and -- provide tangible development scenarios showing how the evaluation methodologies could be applied "on the ground".

CMHC Project Officer : *Douglas B Pollard* ***CIDN*** : 38840216

Division : External Research Program ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

COMPENDIUM OF CANADIAN ACCESSIBLE HOUSING CODES AND STANDARDS

The goal of this External Research Program project is to research technical accessibility requirements for single family homes and multi-family dwellings and to document best practices and innovative design solutions related to accessible housing. The project will develop a database of technical accessibility requirements in each of the Canadian provinces and territories and in select international jurisdictions, as well as a report comparing the accessibility requirements in different jurisdictions and documenting best practices and innovative design requirements.

CMHC Project Officer : *Hoda Shawki*
CIDN : 38840205
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

EFFECT OF SNOW AND ICE ON EXTERIOR RAMP NAVIGATION BY WHEELCHAIR USERS

Wheelchair users are particularly affected by snow and ice conditions since previously accessible facilities become inaccessible. This study is the first quantitative analysis of wheelchair mobility on ramps under winter conditions. Eleven manual wheelchair users ascended an exterior ramp at 1:10, 1:12, 1:16 slopes, under packed snow and "packed snow with a freezing rain cover and traction grit" conditions. Vicon motion tracking, video, and questionnaire data were collected to assess biomechanics and subject perceptions. This study confirmed that independent navigation cannot be assumed for all conditions and ramp grades that are accepted under current building codes. All subjects were able to complete the ice-grit conditions independently at all ramp slopes. For snow conditions, the 1:10 grade was insurmountable for many subjects without assistance. The 1:16 grade was preferred for winter ramp navigation. For snow conditions, the transition area from level ground to the ramp incline was the most difficult to traverse. Backwards ramp ascent should be considered for people with sufficient shoulder and trunk range of motion. For ice-grit ramp navigation, two-railing propulsion was preferred due to enhanced trajectory control and reduced wheel slip problems. The amount of grit required and the effective time (i.e., time when embedded grit becomes much less effective) should be addressed in further research. Typical front wheels are not designed for soft snow conditions and few options exist that attempt to address this need. As the first biomechanical evaluation of wheelchair ramp navigation, the outcomes from this study provide a better understanding of wheelchair user strategies for dealing with ramps in winter.

Prepared by Edward Lemaire, Patricia O'Neill, Marcel M. Desrosiers, Gordon Robertson. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2010 (External Research Program Report) 77 pages (15.8 MB)

Note: No. 10-008 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 67031)

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1_MH_10E27_W.pdf

PATTERNS OF USE OF DIFFERENT TOILET GRAB BAR CONFIGURATIONS

A previous study looking at different toilet grab bar configurations showed that ambulatory and non-ambulatory seniors highly prefer the presence of a grab bar on both sides of the toilet seat contrary to American and Canadian recommended guidelines. This External Research Program study will focus on the "patterns of use" of six (6) different toilet grab bar configurations having grab bars on both side of the toilet seat.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 34380216
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PROFILE HOUSING CONDITIONS OF PERSONS WITH DISABILITIES

The project will analyze data from Statistics Canada's 2001 post censal Participation Activity Limitation Survey (PALS) for the production of a series of research highlights profiling the housing conditions of persons with disabilities - the first based on the 2001 Census data, and subsequent highlights focussing on specific disability areas such as agility and mobility, hearing, seeing, speaking/communication, psychiatric or mental health issues, developmental/intellectual, learning disabilities, as well as the specific needs of children and seniors. These will be based on the 2001 PALS data with links to CMHC's custom core housing need data and a range of socio-economic and demographic characteristics from the Census.

CMHC Project Officer : *Ian Melzer* ***CIDN*** : 35780200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is available on the web

UPDATING AND ENHANCING CMHC PUBLICATIONS REGARDING CONSTRUCTION AND RENOVATION OF HOMES FOR PEOPLE WITH DISABILITIES

The objective of this project is to produce a number of publications in the CMHC About Your House (AYH) series for use by persons with disabilities, architects, occupational therapists, renovators, builders and the general public. Each will be based on information, to be updated, in the publication "Housing for Persons with Disabilities" and will take into account information contained in other FlexHousing™ and Healthy Housing™ publications. The titles for the AYH series include House Plans and Design, Fire Safety, Interior and Exterior Ramps, Kitchens, Bathrooms and Living Spaces, among others.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 31960200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is available on the web

WELCOMING HOME: SOCIAL SUPPORT AS A BENEFIT OF CONGREGATE LIVING FOR PERSONS WITH MENTAL ILLNESS

This External Research Program qualitative study will examine the benefits of congregate living for individuals who have a mental illness or a concurrent disorder. Research and direct service experience suggests that residing in a self-contained unit is desirable and there is high demand for this type of housing. The objectives of this study are: to identify the perceived benefits of residing in self-contained units; to determine whether perceived benefits of residing in self-contained units can be achieved by residing in congregate settings; and to determine whether additional gains are provided through congregate living (e.g., greater social support) in addition to the perceived benefits of residing in self-contained units.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 38840218
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RENOVATION AND INSPECTION

ESTIMATING THE COSTS AND BENEFITS OF HOME RENOVATIONS TO ACCOMMODATE AGING AND DISABILITY

This project will apply the new CMHC cost-benefit framework, or model, to estimate the costs and benefits of home renovations to accommodate aging and disability relative to long-term care institutionalization. The project will include a national survey, involving personal interviews with at least 250 RRAP-D and HASI program beneficiaries and 200 telephone surveys to generate statistically reliable estimates of the costs and benefits. At least 50 caregivers of program beneficiaries will also participate. Following the conduct of the surveys, the resulting cost and benefits of the renovations will be compared with available data on the cost and benefits of long-term care institutionalization. This project will produce estimates of the costs and benefits, and cost-benefit ratios, of home renovations to accommodate aging and disability. Such estimates would be useful to policy at the Federal/Provincial/Territorial/Municipal levels related to funding such housing renovations and to the health services sector, regarding related support services programs for seniors and persons with disabilities. The societal impact on care giving and the health care sector will be examined.

CMHC Project Officer : *Ian Melzer* ***CIDN*** : 35440200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: Technical Research on Renovation and Inspection, p. 26-27

RENTAL HOUSING

REGULATIONS IN THE RESIDENTIAL CONSTRUCTION INDUSTRY IN QUEBEC AND THEIR EFFECTS ON THE COST OF RENTAL HOUSING

This research assesses the impact of the variety of regulations affecting residential construction in Quebec on the cost of rental housing. The research includes a literature search of residential building regulations and interviews with experts in the housing industry, building officials in the Ville de Québec, representatives of the Commission de la construction du Québec (CCQ), l'Association de la construction du Québec (ACQ), the Corporation des entrepreneurs généraux du Québec (CEGQ), and several residential builders. The research includes estimates of the costs of residential construction attributed to these regulations, and their effects on housing rents.

CMHC Project Officer : *Barry Craig* ***CIDN*** : 28920202
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

UPDATING "YOUR GUIDE TO RENTING A HOME" AND "GUIDE TO CO-OP HOUSING"

This project will provide for updating of the substantive content of CMHC's online rental guide ("Your Guide to Renting a Home") annually, and of CMHC's online "Guide to Co-operative Housing" every second year; of the live links contained in these guides every four months, and of the non-link information contained in these guides annually. It will also provide for the handling of enquiries as received and the potential addition of new sections to the guides.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 39660200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CITIZEN'S GUIDE TO DENSITY: UNDERSTANDING RESIDENTIAL DENSITIES IN THE GREATER GOLDEN HORSESHOE

Density targets, a discrete measure of density designed to curb sprawl and encourage compact, sustainable development, are useful benchmarks for planners, architects and developers, but are often unintelligible to the average citizen. Driven by provincial growth directives, municipalities in the Greater Golden Horseshoe are struggling with how to translate density targets into tangible and meaningful examples. This External Research Program research seeks to demonstrate how this can be done through the development of a handbook that will illustrate and simply communicate residential densities that contribute positively to the public realm.

CMHC Project Officer : *Cynthia Rattle* ***CIDN*** : 40140218
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IMPACT OF DEVELOPMENT COST CHARGES ON HOUSING AFFORDABILITY

The objectives of this project are to:
(1) investigate the impact of development cost charges on the price and affordability of housing in Canada;
(2) identify the costs and benefits of both infill and new subdivision developments in Vancouver, Calgary, Winnipeg, Toronto, Montreal and Halifax; and
(3) quantify the up-front and ongoing costs or benefits of infill and new subdivision development on the residents of the new development, residents of existing developments, the local government and the community at large.

CMHC Project Officer : *Mark Holzman* ***CIDN*** : 34060200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IN PURSUIT OF SUSTAINABLE NEIGHBOURHOOD DEVELOPMENT PATTERNS: THE NEXT STEP - A ROAD SAFETY EVALUATION OF ROAD NETWORK PATTERNS, INCLUDING CMHC'S FUSED GRID ROAD NETWORK PATTERN

The objectives of this External Research Program project are:
(1) to develop models for use by Ottawa planners and engineers to do empirical road safety planning;
(2) to apply these models in a case study using actual data, to evaluate the level of safety of CMHC's Fused Grid pattern; and
(3) to compare the road safety of the Fused Grid road network with four other road network patterns.

CMHC Project Officer : *Mark Holzman* ***CIDN*** : 38840212
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ASSESSING THE IMPLICATIONS OF POPULATION AGING ON THE EXISTING HOUSING STOCK: IMPLICATIONS OF POPULATION AGING FOR REAL HOUSING PRICES

Population aging is a trend that will accelerate in Canada in the next two decades with the aging of the baby boom generation. The goal of this research is to study the effects of population aging on real housing prices in Canada. The project includes a review of the Canadian and the international literature on the effects of demographic changes on real housing prices and the development of an econometric model of these effects for Canada. The model is used to project real housing price changes in Canada and in each province for the next 20 years under different scenarios.

CMHC Project Officer : *Hoda Shawki* ***CIDN*** : 37680200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CERTIFICATION OF SENIORS' RESIDENCES IN QUEBEC: FACILITATING AND CONSTRAINING FACTORS

In February 2007, the Government of Quebec introduced a mandatory process for the compliance certification of all seniors' residences. The development and application of such a process pose major challenges for the different stakeholders in this process in order to meet organizational changes and the standardization of a series of practices that are now imposed in this sector. This External Research Program study aims to highlight the positive factors and constraints perceived by three of the stakeholders in this process, namely, the operators, the agencies and the "Conseil québécois d'agrément" (Quebec certification council).

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 40140212
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

FEASIBILITY OF SMART VOICE TECHNOLOGY TO IMPROVE SUPPORT IN AFFORDABLE SENIORS' HOUSING

Smart technologies facilitate the independent living of older adults. In this External Research Program pilot study, 10 prototype smart voice fridge sensors that provide voice prompts and report activity status will be installed and tested in affordable seniors' housing units to confirm user acceptance and system performance. The feasibility of larger scale implementation will be determined.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 40140210
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PROBABLE EFFECTS OF AN AGING POPULATION ON THE HOUSING MARKET: A PROSPECTIVE STUDY

In the coming decades, Quebec will be confronted by an aging population. Though the impacts on employment seem obvious and well documented, the same cannot be said, unfortunately, for the housing field, even though the consequences will be just as important. This research will follow the path baby boomers have been taking since 1965 and will attempt to identify the main upheavals that will affect the housing market from now until 2050.

CMHC Project Officer : *Jim Zamprelli* — ***CIDN*** : 36260206
Division : External Research Program — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SMART GRAB BARS: A POTENTIAL INITIATIVE TO ENCOURAGE BATH GRAB BAR USE IN COMMUNITY DWELLING OLDER ADULTS

Seniors frequently fall in the bathroom despite the presence of bath grab bars, as they have reported not always using them. This External Research Program project focuses on further developing an unobtrusive device, the smart grab bar, to encourage its use while bathing to decrease the risk of falls, and to evaluate its effectiveness in the target population.

CMHC Project Officer : *Jim Zamprelli* — ***CIDN*** : 38840207
Division : External Research Program — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

UPDATING THE PUBLICATION "HOUSING FOR OLDER CANADIANS: THE DEFINITIVE GUIDE TO THE OVER 55 MARKET"

This project will focus on updating the publication "Housing for Older Canadians: The Definitive Guide to the Over-55 Market", published by CMHC in 1999. The updated product will comprise a series of shorter publications that are based on updated content and that focus on a narrower range of topics. The new product will be available in both print and web formats and will make the information more accessible to the industry at a time when the market for seniors' housing is growing.

CMHC Project Officer : *Hoda Shawki* — ***CIDN*** : 39690200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DO SOCIAL HOUSING ALLOCATION METHODS HAVE AN EFFECT ON THE WELL-BEING AND HEALTH OF FAMILIES? A COMPARISON OF LOW-RENT HOUSING PROGRAMS AND RENT SUPPLEMENT PROGRAMS IN MONTRÉAL

This project looks at different social housing formulas as a factor that influences well-being and health. It is based on the hypothesis that different types of housing assistance contribute in different ways to well-being and health. This hypothesis will be tested by comparing the levels of well-being and health of families under two social housing programs in Montréal.

CMHC Project Officer : *Jim Zamprelli*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 41330204
STATUS : Ongoing
NEW

REGENT PARK LONGITUDINAL HEALTH STUDY

This study will investigate the effects of the Regent Park Social Housing Revitalization Project - Phase 1 Redevelopment on the health and well-being of residents, and how interventions in the built environment may reduce health inequalities and improve the lives of low-income, urban populations, using a quasi-experimental research design. The redevelopment plan seeks to: a) create social mix; b) promote positive social interaction (using innovative architectural and urban designs); and c) create affordable home ownership for a subset of residents.

CMHC Project Officer : *Mark Salerno*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 34470200
STATUS : Ongoing

REGENT PARK REVITALIZATION : YOUNG PEOPLE'S EXPERIENCE OF RELOCATION FROM PUBLIC HOUSING DEVELOPMENT

The Toronto Community Housing Corporation (TCHC) recently began phased redevelopment of Regent Park, Canada's oldest and largest public housing project. The relocation plan calls for successive phases of Regent Park tenants to be relocated temporarily while their homes are rebuilt. Under the plan, tenants are relocated temporarily in public housing either inside Regent Park or elsewhere within Greater Toronto. In contrast to many other public housing redevelopment initiatives, the approximately 2000 Regent Park tenant households are to have a legal right to return to their rebuilt homes. This study sought to explore the social impacts on youth -- particularly young people aged 12-17 years -- of the displacement, relocation and eventual resettlement experienced in the course of the first phase of Regent Park redevelopment.

Prepared by Laura C. Johnson with Rick Schippling. CMHC Project Officer: Cynthia Rattle. Ottawa: Canada Mortgage and Housing Corporation, 2009. (External Research Program Report) 42 pages (1.30 MB) + 1 CD-ROM

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2009R255_W.pdf

SOCIAL AND AFFORDABLE HOUSING REDEVELOPMENT AND REGENERATION PROJECTS

The purpose of this project is to examine, through case study research, the redevelopment and regeneration of social and affordable housing. The research will document efforts to address obsolescence in social and affordable housing, that is, buildings that are nearing the end of their lifecycle or where building functionality is incompatible with current tenant and/or community needs. The research will also examine efforts to pursue redevelopment opportunities (e.g. increasing the number of affordable housing units, improving access and movement on site, selling vacant land and/or buildings, etc.). The research project is intended to act as a source of information for public and private property owners.

CMHC Project Officer : *Janet Neves* ***CIDN*** : 37550200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUPPORTIVE/SUPPORTED HOUSING WITHIN SOCIAL HOUSING

This project will examine the role of social housing in providing the housing component of supported/supportive housing, to include: a description of supported or supportive housing models within social housing and an estimate of its prevalence; an analysis of the experiences with supported/supportive housing within social housing, from the point of view of housing providers, service providers, residents and government agencies; a review of successful partnerships, lessons learned and best practices in the provision of supported/supportive housing.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 38220200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: DEVELOPMENT OF AN ENERGY MANAGEMENT PILOT PROGRAM FOR SOCIAL HOUSING IN ONTARIO, p. 12
AFFORDABLE HOUSING FOR FAMILIES: ASSESSING THE OUTCOMES, p. 43

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

COMMUNITY ENVIRONMENTAL (CARBON FOOTPRINT) REDUCTION PROJECT

This External Research Program project will test the effectiveness of a community based approach to reducing the environmental carbon footprint of individual households in existing neighbourhoods. It will investigate the differences in footprint between neighbourhood and housing types, the environmental measures most likely to be implemented by residents and the results of these actions.

CMHC Project Officer : *Meg Ogden* ***CIDN*** : 40140217
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ESTIMATING THE GREEN HOUSE GAS IMPLICATIONS OF LAND-USE PATTERNS: A METHODOLOGY FOR LOCAL GOVERNMENTS

This External Research Program project will develop a dedicated tool to empower communities to define parameters and subsequently assess the energy and greenhouse gas (GHG) emission implications of planning decisions. It will build upon and extend research completed for Salt Spring Island, BC, which examined the long-term greenhouse gas implications of different build-out scenarios and found that significant current GHG emissions savings were achievable. This project will result in a model that can be deployed by small and medium sized communities to measure the greenhouse gas implications of planning scenarios.

CMHC Project Officer : *Meg Ogden* ***CIDN*** : 40140215
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

FAMILIES LIVING DOWNTOWN: CHALLENGES AND BENEFITS

This External Research Program study will examine the housing-related experiences of families who are choosing to live in or near downtown areas. It will examine the reasons for their choice, how they are managing their urban life with their children, and the challenges and benefits they experience once they have lived there for some time. These experiences will be related to key objective measures of their own residence and their downtown neighbourhood. This research will complement previous views on how to plan central areas for families by studying the experiences of downtown family residents, those who actually "live their life" there.

CMHC Project Officer : *Mark Holzman* ***CIDN*** : 34380210
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

INDEX FOR "LANDSCAPE GUIDE FOR CANADIAN HOMES"

This project will add the following new and updated features in "Landscape Guide for Canadian Homes": an index, photos of each plant in the plant list, plus updates to the "resources and further reading" section.

CMHC Project Officer : *Susan Fisher* ***CIDN*** : 36710200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

POTENTIAL OF REPLOTTING TO IMPROVE THE SUSTAINABILITY OF CITIES IN WESTERN CANADA

This External Research project is based on the hypothesis that replotting can be employed as a useful tool for developers and housing/planning authorities to assist in certain land assembly situations. The research will investigate whether the replot legislation extant in western Canada could be used to overcome a weakness often seen in the land development process in urban intensification locales, and thereby show how governments and developers can bring about better developments that will contribute to improving the sustainability of cities.

CMHC Project Officer : *Cynthia Rattle* ***CIDN*** : 40140216
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUSTAINABILITY INDICATORS FOR COMPUTER-BASED TOOLS IN COMMUNITY DESIGN

This External Research Project will evaluate sustainability indicators for potential integration with widely used geographic information system based modelling and visualization tools. It will refine the content and method of the indicators most suitable for such integration, propose new indicators where necessary, test refined and proposed indicators in a case study project and evaluate the results for broad application.

CMHC Project Officer : *Mark Holzman* ***CIDN*** : 34380211
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

UNDERSTANDING THE SMART GROWTH GAP

This project will investigate the reasons for the gap between stated municipal policy objectives, which align with the goals of Smart Growth, and the results on the ground. It will aim to answer the following questions:

- What prevents the accomplishment of set goals?
- Are the goals inherently unachievable?
- What are the expected impacts of Smart Growth practices under a normal positive scenario?
- What time lines can be speculated or calculated for prescribed outcomes?
- What strategies are deemed most effective with respect to the level of impact?

The intent of this research is to enable local governments and industry to lay out a strategy that will produce sustained positive outcomes with predictable beneficial effects for the environment and for the well-being of community residents.

CMHC Project Officer : *Mark Holzman* ***CIDN*** : 35230200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: Technical Research on Sustainable Development & Healthy Housing, p. 27-31

BUILDING COMMUNITY: THE STORY OF SUPPORTIVE HOUSING FOR YOUNG MOTHERS (SHYM)

Using Halifax's Supportive Housing for Young Mothers (SHYM) program as a case study, this research examines both the supportive housing model that underlies such programs and the experience of young mothers who are being served. The objective of the research was to determine how effective supportive housing is at helping young mothers build/rebuild a strong sense of self, develop/redevelop social and human capital for their futures, and acquire life-management and parenting skills.

Prepared by Jeff Karabanow, Jean Hughes and Candida Hadley Ottawa: Canada Mortgage and Housing Corporation, 2009. (External Research Program Report) 192 pages (738.20 KB)

Note: No. 10-009 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 66998)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2009B71_w.pdf

HOUSING DIFFICULTIES AND HOUSING PROGRAMS IN THE LIVES OF ABUSED WOMEN

This External Research Program project intends to learn more about the housing difficulties and experiences of women who have experienced different kinds of interpersonal violence (i.e. spousal, family, and landlord), and to explore how their experiences vary as a function of the kind of violence.

CMHC Project Officer : *Sandra Baynes*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 38840203
STATUS : Ongoing

CMHC RESEARCH REPORT LISTINGS

To provide quick and comprehensive access to CMHC research published on a given topic, the Canadian Housing Information Centre compiles comprehensive listings of housing research produced over a number of years on certain topics. Topics chosen are those for which there is ongoing client interest and/or for which CMHC has published considerable research. To obtain an electronic, faxed or mailed copy of any of the lists below, contact the Canadian Housing Information Centre at: 1-800-668-2642 or e-mail us at: chic@cmhc.gc.ca

Listings available at this time include:

♦ Aboriginal Housing	♦ Acoustics
♦ Affordable Housing	♦ Airtightness
♦ Basements, Foundations and Crawl Spaces	♦ Concrete
♦ Condominiums	♦ Cooperative Housing
♦ Environmental Site Assement and Contaminated Lands	♦ Healthy Housing
♦ Heating and Ventilation	♦ Homelessness
♦ Housing and Women	♦ Housing Export Opportunities
♦ Housing for Older Canadians	♦ Housing for Persons with Disabilities
♦ Indoor Air Pollution	♦ Infrastructure
♦ Lead	♦ Log Home Construction
♦ Manufactured Housing	♦ Moisture Problems
♦ Mortgages and Housing Finance	♦ Newcomers, Immigration & Settlement
♦ Northern Housing	♦ Rental Housing
♦ Residential Construction Waste	♦ Residential Renovation
♦ Self Help Housing	♦ Social Housing
♦ Straw Bale Housing	♦ Sustainable Development
♦ Water Conservation, Reuse and Management	

ABOUT YOUR HOUSE SERIES

Fact sheets on common housing questions, issues and problems.

These documents are available in HTML and Adobe Acrobat format (pdf) on the CMHC web site at: http://www.cmhc.ca/en/co/co_001.cfm

Print copies can be obained by calling 1-800-668-2642

Order no.	Series no.	Title
62027	CE 1	**Measuring Humidity in Your Home** Is there condensation on the windows? Are there wet stains on the walls or ceilings? Is there static or sparks whenever you touch something? Diagnose humidity problems in your home. Aussi disponible en français sous le titre : Mesurer l'humidité dans votre maison
62028	CE 2	**Combustion Gases in Your Home** Do you have a gas or oil fired furnace, boiler or water heater? What about a woodstove or fireplace? Take the necessary steps to keep combustion gases out of your home. Aussi disponible en français sous le titre : Les gaz de combustion dans votre maison
62029	CE 3	**Asbestos** What is asbestos? Why is it so useful? What problems can asbestos cause and what options does the homeowner have in dealing with them? Aussi disponible en français sous le titre : Amiante
62030	CE 4	**Hydronic Radiant Floor Heating** Heating option for homes. Tubes are placed in concrete floor with water running through. Popular in bathrooms and kitchen, and can be done for entire house - new or existing. Aussi disponible en français sous le titre : Système de chauffage à eau chaude par rayonnement à partir du sol
62031	CE 5A	**Understanding Window Terminology** This factsheet offers helpful guidance on buying the right type of window for your home. Terminology commonly used in the window industry is also presented. Aussi disponible en français sous le titre : Comprendre la terminologie des fenêtres
62032	CE 6	**Urea-Formaldehyde Foam Insulation (UFFI)** What is UFFI? Why was it banned? Should you be concerned about UFFI? How do you know if your home has UFFI? Aussi disponible en français sous le titre : Mousse isolante d'urée-formaldéhyde (MIUF)

Order no.	Series no.	Title
60515	CE 7	**After the Flood** Protect your health and prevent further damage to your home by following this step-by-step guide to restoring your home after a flood. Aussi disponible en français sous le titre : Après une inondation
60516	CE 8	**Fighting Mold: The Homeowner's Guide** Mold can cause allergies or respiratory disease. Learn how to identify and eliminate mold from your home. Aussi disponible en français sous le titre : Combattre la moisissure -- Guide pour les propriétaires-occupants
62043	CE 9	**Maintaining Your HRV** For a clean and healthy living environment, review the seven steps to maintaining the Heat Recovery Ventilator (HRV). Aussi disponible en français sous le titre : L'entretien du VRC
60339	CE 10	**Wood Heat Safety in an Emergency** Whether you often use a wood stove or a fireplace, or are coping with an emergency loss of electricity, learn how to safely use wood to heat your home. Aussi disponible en français sous le titre : Le chauffage au bois en toute sécurité lors d'une situation d'urgence
60356	CE 11	**When You Must Leave Your House Due to Prolonged Winter Power Outage** A series of practical tips to protect your home in case you are required to evacuate for more than 24 hours because of power failure. Aussi disponible en français sous le titre : Si vous devez quitter votre maison à cause d'une longue interruption de courant en hiver
60360	CE 12	**Helping Your Trees Survive Storm Damage** Practical pruning advice to restore the health and shape of trees damaged by ice or wind storms. Aussi disponible en français sous le titre : Soins à donner aux arbres endommagés par une tempête
62034	CE 13	**Attic Venting, Attic Moisture, and Ice Dams** How do you deal with a leak in the ceiling? How should an attic be properly vented? How do you eliminate ice dams? This fact sheet will answer these and other attic related questions. Aussi disponible en français sous le titre : Ventilation du vide sous toit, humidité dans le vide sous toit et formation de barrières de glace

Order no.	Series no.	Title
62035	CE 14	**Soot Staining on Carpets** Does your carpet have permanent dark stains near baseboards, air registers or under doorways? Find out what causes carpet streaking and what you can do about it. Aussi disponible en français sous le titre : Taches en traînée sur les moquettes
62036	CE 15	**Removing Ice on Roofs** Whether you have a sloped or flat roof, learn techniques that will help you deal with extensive roof icing or ice dam problems. Aussi disponible en français sous le titre : L'enlèvement de la glace sur les toitures
62037	CE 17	**The Importance of Bathroom and Kitchen Fans** Choosing the proper kitchen and bathroom fans is important for improving indoor air quality and maintaining ideal humidity levels. Aussi disponible en français sous le titre : Importance des ventilateurs de cuisine et de salle de bains
62038	CE 18	**How to Read a Material Safety Data Sheet (MSDS)** Reading and understanding the Material Safety Data Sheet (MSDS) provides product information about product hazards and the necessary safety precautions to follow when using it. Aussi disponible en français sous le titre : Comment déchiffrer une fiche technique sur la sécurité des substances (FTSS)
62039	CE 19	**Insulating Your House** Choose the right insulation to reduce the amount of energy you use and to make your home more comfortable. Aussi disponible en français sous le titre : L'isolation de votre maison
62040	CE 21	**Log Homes: Frequently Asked Questions** A list of questions and answers concerning the unique design and building considerations for log homes. Aussi disponible en français sous le titre : Foire aux questions - maisons en rondins
62041	CE 22	**Your Furnace Filter** To reduce exposure to airborne particles, choose the furnace filter that best suits your needs. Aussi disponible en français sous le titre : Le filtre de votre générateur d'air chaud

Order no.	Series no.	Title
62042	CE 23	**Water-Saving Tips for Your Lawn and Garden** Often water is applied inefficiently, resulting in significant waste due to over watering, evaporation or run-off. Here are some general watering tips to avoid such waste. Aussi disponible en français sous le titre : Comment entretenir vos pelouses et jardins en économisant l'eau
60417	CE 24	**Backup Power for Your Home** The top ten tips in choosing the appropriate backup system to provide electricity to your home in the event of a prolonged power failure. Aussi disponible en français sous le titre : Alimentation de secours pour votre maison
62046	CE 25	**Carbon Monoxyde** A list of questions and answers dealing with keeping Carbon Monoxide out of your home and to help you choose the right CO detector. Aussi disponible en français sous le titre : Le monoxyde de carbone
62277	CE 26a	**Hiring a Contractor** How do you find the "right" contractor for you? What should go in a contract? What are liens, holdbacks and completion certificates? Make sure you get what you want and pay for when hiring a contractor. Aussi disponible en français sous le titre : Le Choix d'un entrepreneur
62351	CE 26b	**Sample Renovation Contract** A detailed written contract between you and the contractor you hire is essential to any renovation or home repair project, no matter its size. Aussi disponible en français sous le titre : Modèle de contrat de rénovation
62045	CE 27	**Choosing a Dehumidifier** Air that is too damp can cause condensation on windows, water damage to materials, mold and even wood rot. Choose the right dehumidifier to regulate the humidity in your home. Aussi disponible en français sous le titre : Le Choix d'un déshumidificateur
	CE 28	**The Renovation Project (12 parts)**
		This series will assist you in making informed decisions before you renovate. Each easy-to-read fact sheet helps you ask the key questions, reviews the available options and discusses the consequences if certain aspects of the renovation are overlooked. Advance planning is the key to successful renovations. These fact sheets help you plan, assess, and avoid surprises. Achieve the results you want by doing your renovation right the first time.

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
62246	CE 28a	**Assessing the Renovation Project** Before renovating, it's important to assess your home's current condition to determine if there are significant problems that you must deal with before or during the renovation project. Aussi disponible en français sous le titre : Évaluation des travaux de rénovation
62248	CE 28b	**Renovating your Basement - Structural Issues and Soil Conditions** Renovating a basement can add value and extra living space to a home. Fixing foundation problems before renovating is essential to preserve the durability and structure of the house. Aussi disponible en français sous le titre : Rénovation du sous-sol - Aspects structuraux et conditions du sol
62250	CE 28c	**Renovating Your Basement - Moisture Problems** Is there condensation on the basement windows? Are there white chalky stains on the foundation? Do the carpets smell musty? Creating a clean, dry and healthy living space is a critical first step. Aussi disponible en français sous le titre : Avant de rénover votre sous-sol - Problèmes d'humidité
62252	CE 28d	**Renovating Your Kitchen** The kitchen is often the most used room in the house and kitchen renovations typically have the highest financial payback. Conduct a pre-renovation inspection and prioritize the most desirable features for your new kitchen. Aussi disponible en français sous le titre : Avant de rénover votre cuisine
62254	CE 28e	**Renovating Your Bathroom** Bathroom renovations offer the second highest financial payback rate and are one of the most common home improvement projects. Use this fact sheet to check for problems before you renovate. Aussi disponible en français sous le titre : Rénovation de la salle de bains
62256	CE 28f	**Window and Door Renovations** Do you want more natural light in your living area? Are you concerned about security? Before repairing or replacing windows and doors, consider all of the factors outlined in this fact sheet. Aussi disponible en français sous le titre : Nouvelles portes et fenêtres

Order no.	Series no.	Title
62258	CE 28g	**Repairing or Replacing Roof Finishes** Regular maintenance and periodic roof inspections will identify problems before they cause costly damage to your home. Learn about the key factors that will determine whether you should repair or replace your roof. Aussi disponible en français sous le titre : Avant de réparer ou remplacer le revêtement du toit
62260	CE 28h	**Repairing and Replacing Materials - Exterior Walls** Exterior finish materials must prevent rain and snow from penetrating the building and causing moisture damage. Repairing or replacing exterior wall finishes will protect and preserve the durability and structure of the home. Aussi disponible en français sous le titre : Avant de réparer ou remplacer des matériaux - les murs extérieurs
62262	CE 28i	**Energy Efficient Retrofit - Mechanical Systems** Upgrading the heating, cooling and ventilation (HVAC) equipment is the best way to create a healthy, comfortable and less expensive home to operate. Before altering these, it is important to understand how the overall performance of the house will be affected. Aussi disponible en français sous le titre : Avant d'améliorer l'efficacité énergétique de votre maison - installations mécaniques
62264	CE 28j	**Energy Efficient Retrofit - The Building Envelope** The envelope, or outer layer, of your house separates living space from the outdoor elements. Improving it can result in a better insulated, more airtight home that is easier to heat. Aussi disponible en français sous le titre : Améliorer l'efficacité énergétique - L'enveloppe du bâtiment
62266	CE 28k	**Assessing the Comfort and Safety of Mechanical Systems** The heating, ventilating and air conditioning (HVAC) systems are a vital part of your home. Ensure that your mechanical systems are operating safely and efficiently. Aussi disponible en français sous le titre : Évaluation de vos installations mécaniques - confort et sécurité
62268	CE 28L	**A New Addition** Before building an addition, clearly identify the features you need and inspect the current structure and mechanical systems to be sure they can support the new addition. Aussi disponible en français sous le titre : Avant de construire une annexe

Order no.	Series no.	Title
62044	CE 29	**Should you get your Heating Ducts Cleaned?** Should you get your heating ducts cleaned? Will clean ducts result in improved air quality? When is duct cleaning most appropriate? This fact sheet separates fact from fiction. Aussi disponible en français sous le titre : Doit-on faire nettoyer les conduits de chauffage?
63322	CE 30	**Water Damage, Mold and House Insurance** You've had water damage in your house due to a burst pipe, a roof leak, or a heavy summer storm. You hope that your insurance will cover the damage. What to do? Aussi disponible en français sous le titre : Moisissure, dommages causés par l'eau et assurance habitation
62226	CE 31	**Understanding and Dealing with Interactions Between Trees, Sensitive Clay Soils and Foundations** Is the size, type or siting of a tree affecting your foundation? Understanding the interactions between trees, soils and the foundation can help you avoid foundation shifting, cracks and other damage. Aussi disponible en français sous le titre : Comprendre l'interaction des arbres, du sol d'argile sensible et des fondations et agir en conséquence
65329	CE 32	**Setback Thermostats** There are many claims about the energy savings due to setback thermostats. This document quantifies the savings but also describes houses or conditions where setback thermostats are not recommended. Aussi disponible en français sous le titre : Les thermostats programmables
62288	CE 33	**CMHC Garbage Bag Airflow Test** This simple test uses an ordinary garbage bag to help you estimate airflow from your furnace registers, bathroom exhaust fan or clothes dryer exhaust. Aussi disponible en français sous le titre : Essai de mesure du débit d'air à l'aide d'un sac à ordures
62795	CE 34	**Your Septic System** A primer on the components, operation and proper maintenance of an in-ground septic tank and system. Aussi disponible en français sous le titre : Votre installation d'assainissement
62839	CE 35	**Hiring a Home Inspector** One of the best ways to understand about a home's condition, habitability and safety is to hire a professional home inspector. Aussi disponible en français sous le titre : Le Choix d'un inspecteur en bâtiment

Order no.	Series no.	Title
62341	CE 36	**The Condominium Owners' Guide to Mold** Special advice for identifying and removing mold in a condo, and solving the problems that cause it. Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des copropriétaires
63902	CE 37	**The Tenant's Guide to Mold** This guide provides tenants of apartment buildings or rental houses with information to understand why mold grows and what they can do if they find mold growing in their unit. Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des locataires
64066	CE 38	**How to Reduce Chemical Contaminants in Your Home** This guide focuses on reducing exposure to chemical contaminants in the home, and will help you identify and avoid household products and materials which are sources of chemical contaminants. Aussi disponible en français sous le titre : Réduire les contaminants chimiques dans votre maison
62935	CE 39	**Buying a Toilet** Advice and tips on what to look for when buying a toilet. Aussi disponible en français sous le titre : L'achat de toilettes
63319	CE 40	**Buying a House with a Well and Septic System** Information on what to inspect and test if a property has a well and/or septic system. Includes checklists for potential buyers. Aussi disponible en français sous le titre : L'achat d'une maison avec un puits et une installation septique
62953	CE 41A	**UV Water Treatment** Describes the ultra-violet light water treatment process, and the pros and cons of using such a system. Aussi disponible en français sous le titre : Traitement de l'eau aux rayons ultraviolets (UV)
62898	CE 41B	**Water Distillers** Everything you ever wanted to know about water distillers from how they work to how to install and maintain them. Aussi disponible en français sous le titre : La distillation de l'eau

Order no.	Series no.	Title
62896	CE41C	**Water Filters** Consumer series of household water treatment options. Water filters are an inexpensive method of additional water treatment. Some filters can remove certain contaminants such as lead. Aussi disponible en français sous le titre : Filtres à eau
62946	CE 41D	**Water Softeners** Find out how a water softener works and obtain information on whether you should consider installing one. Aussi disponible en français sous le titre : Les adoucisseurs d'eau
62962	CE 41E	**Reverse Osmosis Water Treatment** Describes the reverse osmosis water treatment process, and provides the pros and cons of using such a system. Aussi disponible en français sous le titre : Filtration de l'eau par osmose inverse
62966	CE 42	**Canada's Construction System** The purpose of this document is to foster understanding of the elements of the system of construction and operation of buildings and houses in Canada. Aussi disponible en français sous le titre : Système de construction canadien
63890	CE 43	**Photovoltaics (PVs)** Consumer information piece presenting information on solar electric (photovoltaic) systems for housing Aussi disponible en français sous le titre : Les systèmes photovoltaïques
63134	CE 44	**Painting: Walls, Ceilings and Floors** This fact sheet provides general information on: selecting paints, e.g. latex (water based) or alkyd (oil based); types of paint and paint finishes, e.g. low or high sheen, sealer, primer, melamine; estimating quantity of paint required; preparing for painting; and painting tips. Aussi disponible en français sous le titre : La peinture : murs, plafonds et planchers.
63144	CE 45	**Flooring Choices** A quick summary of the advantages, considerations, installation, maintenance, and costs to think about when choosing resilient, laminate, and wood flooring, as well as carpet and ceramic tile. Aussi disponible en français sous le titre : Les revêtements de sol

Order no.	Series no.	Title
63349	CE 46	**Fighting Asthma in Your House** Practical tips to help people with asthma improve the indoor air quality of their home. Aussi disponible en français sous le titre : Combattre l'asthme à la maison
63218	CE47	**Home Maintenance Schedule** This fact sheet provides a listing of the regular home maintenance tasks which should be done at various times throughout the year to protect the condition of your house. Aussi disponible en français sous le titre : Calendrier d'entretien de votre maison
63227	CE48	**Replacing Your Furnace** This fact sheet provides information for consumers who are replacing their existing furnace with a new one. It deals with fuel choice, furnace selection, and furnace sizing. Aussi disponible en français sous le titre : Le remplacement d'un générateur de chaleur
63235	CE 49	**Getting Your House Ready to Sell** Tips for homeowners who wish to get their house ready to sell. Aussi disponible en français sous le titre : Ce qu'il faut faire avant de mettre votre maison en vente
63436	CE50	**Avoiding Basement Flooding** Basement flooding leads to damage of the finishing material and possible growth of mold. This document reviews why basements flood and how to prevent floods from occurring. Aussi disponible en français sous le titre : Comment prévenir les inondations de sous-sol
63486	CE51	**Get to Know Your Soil** This fact sheet provides practical tips on how to analyse soil so that you can select the plants that are suited to the soil you have on your property. Once you have determined the soil conditions, it provides tips on how to amend it, if needed. Aussi disponible en français sous le titre : Apprenez à connaître votre sol
63488	CE52	**Low-Maintenance Lawns** Low-maintenance lawns help to reduce the time, costs, water, pesticides, fertilizer and energy used to maintain lawns. This fact sheet describes the benefits and provides practical tips on how to install and maintain low maintenance lawns, including species selection. Aussi disponible en français sous le titre : Les pelouses à faible entretien

Order no.	Series no.	Title
63490	CE53	**Rain Gardens: Improve Stormwater Management in Your Yard** Rain gardens are landscaped areas designed to receive stormwater and allow it to infiltrate into the soil. This fact sheet describes the benefits and provides practical tips on how to install and maintain gardens. Aussi disponible en français sous le titre : Un jardin pluvial pour mieux gérer les eaux de ruissellement dans votre cour
63492	CE54	**Understanding Your New Home Sales Contract** This fact sheet provides information on some of the terms and provisions that you may find in a new home sales agreement to illustrate what a contract can cover and an explanation why. Aussi disponible en français sous le titre : Comprendre le contrat de vente de votre maison neuve
63495	CE55	**Selecting A New Home Builder** This fact sheet provides information on how to find and what to look for and consider when searching for the right builder to build your new home. Aussi disponible en français sous le titre : Le choix d'un constructeur d'habitations
63637	CE56	**Preventing Falls on Stairs** This fact sheet tells you about some of the ways you can reduce the risk of falling on or from residential stairs. Aussi disponible en français sous le titre : Comment prévenir les chutes dans les escaliers
63730	CE57	**Efficient, Convenient Wood Heating** This is a short guide to the proper use of woodburning appliances in homes: what appliances to choose, how to operate them efficiently, what wood to burn, how to cut and store it, etc. Aussi disponible en français sous le titre : Le chauffage au bois pratique et efficace
63683	CE58	**The ABC's of Windows** This document will help consumers understand and select window performance levels with respect to airtightness, rain penetration and wind resistance appropriate for their climatic (and geographical) location and exposure conditions. Aussi disponible en français sous le titre : L'ABC des fenêtres

Order no.	Series no.	Title
63911	CE59	**Should You Test the Air in Your Home for Mold?** Testing the air in their home or apartment for mold is usually the first thing many people ask for when they suspect the presence of mold or have discovered mold growth. This fact sheet explains why air testing is not recommended, why an investigation by a trained professional is more useful and what to do if testing is deemed necessary. Aussi disponible en français sous le titre : Faut-il faire analyser l'air de la maison pour déceler la présence de moisissures?
63822	CE60	**What to Do After a Fire** Protect your health and prevent further damage to your home by following this detailed guide on the steps to restore your home after a fire. Aussi disponible en français sous le titre : Que faire après un incendie
64092	CE61	**Renovating Your Basement for Livability** This About Your House describes how renovating a full-height basement can be a relatively easy and cost-effective way to add new living space to your house. Aussi disponible en français sous le titre : Rénovation du sous-sol - objectif d'habitabilité
64064	CE62	**Lead in Older Homes** This About Your House describes where lead is found in older homes and who is at risk to lead exposure. It also describes procedures for testing lead in soil, water, paint, and dust. Aussi disponible en français sous le titre : Le plomb dans les vieilles maisons
65023	CE63a	**Accessible Housing by Design - Ramps (Large Print)** For anyone who needs to make their house accessible to someone who uses a wheelchair or other mobility device, this About Your House sheds light on the design and construction of ramps for the home. After reading this publication, you will understand how a ramp should be built, the materials that should be used and things to take into consideration before building a ramp for your home. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - Les rampes d'accès (à gros caractères)

Order no.	Series no.	Title
65080	CE63b	**Accessible Housing by Design - Appliances (Large Print)** The design of an appliance can make it very easy or very difficult to use. If you have a disability, limitations in an appliance's design can make it almost impossible to use. Using the principles of Universal Design, this About Your House will help you select an appliance by outlining important design considerations, making helpful suggestions and explaining the safety features of appliances. Aussi disponible en français sous le titre : Une habitation accessible dès la conception — les appareils (à gros caractères)
65542	CE63c	**Accessible Housing by Design - Lifts & Residential Elevators** Residential lifts and elevators can benefit many people— particularly seniors who want to remain in their homes despite a loss of mobility, strength or agility. This About Your House tells you about the types of residential lifts and elevators that are commonly available in Canada. It also tells you about some of the things you should consider when you choose and install an elevator or lift in your home. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - élévateurs et ascenseurs résidentiels
65544	CE63d	**Accessible Housing by Design - Residential Hoists and Ceiling Lifts** A residential hoist or ceiling lift can help people who have difficulty safely moving themselves or others in or out of bed, or in or out of a bathtub. This About Your House tells you about the types of residential hoists and ceiling lifts that are commonly available in Canada. It also tells you about some of the issues you should consider when you choose and install a hoist or ceiling lift in a house, condominium or apartment. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - les lève-personnes résidentiels
65588	CE63e	**Accessible Housing by Design - Kitchens** A home designed and constructed to reflect the principles of Universal Design is safer and more accommodating to the diverse range of ages and abilities of people who live in and visit this home. This About Your House discusses the Universal Design kitchen, which considers efficient design, efficiency of effort, adaptability, ease of cleaning, audibility and safety in order to provide a comfortable and safe space for all family members. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - les cuisines

Order no.	Series no.	Title
65686	CE63f	**Accessible Housing by Design: Bathrooms** A bathroom designed and constructed according to the principles of universal design should be comfortable and safe for all family members, regardless of age or ability. This About Your House outlines the design considerations and elements of a universally designed bathroom, from manoeuvring space and ease of cleaning to grab bars and walk-in bathtubs and showers. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - salle de bains
65889	CE63g	**Accessible Housing by Design: Home Automation** The use of technology and automation in the home can help create living spaces that are convenient and energy efficient, that minimize the potential for accidents, and result in a house that is able to adapt to life's changes. Home automation provides many benefits to people with physical, sensory and mental disabilities, allowing them to live more independently. This AYH describes systems and devices that can control elements of your home environment . lighting, appliances, telephones, home security and mechanical, entry and safety systems . resulting in an environment that is more accommodating to everyone who lives there or visits, regardless of age or physical ability. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - Domotique
66091	CE63h	**Accessible Housing by Design: Fire Safety for You and Your Home** People with disabilities and seniors are more likely to be injured in a fire than the general population as they are often unable to evacuate independently and quickly, and are not prepared with a fire safety plan. This About Your House provides many quick and easy steps that you can take to prevent fires in your home and plan for fire and emergency situations and minimize accidents ensuring that your home occupants, especially people with disabilities and seniors family are safe. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - la sécurité-incendie pour assurer votre protection et celle de votre habitation
66093	CE63i	**Accessible Housing by Design: House Designs and Floor Plans** This fact sheet provides design guidelines for the most common types of accessible house designs including: visitable housing, adaptable and accessible housing and housing built using the concepts of universal design. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - types d'habitations et plans d'étages

Order no.	Series no.	Title
66095	CE63j	**Accessible Housing by Design: Living Spaces** This fact sheet provides an overview of planning and design. guidelines to consider when creating, renovating or redecorating the living spaces in your home. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - les espaces habitables
66348	CE64	**How to Get the Ventilation That You Need in Your House** This document provides a guide to using the ventilation systems in your house to provide adequate fresh air to residents. Aussi disponible en français sous le titre : Comment bien ventiler votre maison
65009	CE65	**Garden Suites** With municipal approval, a garden suite is a self-contained unit, set on relative's property with an existing single family house. This publication provides introductory information on garden suites for seniors or persons with disabilities. Aussi disponible en français sous le titre : Les pavillons-jardins
65527	CE66A	**How to Lock Out Crime - Home Security 101** This fact sheet walks you through an assesment of your home's current security; includes a checklist that can help you assess what needs to be improved. Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile 101
65529	CE66B	**How to Lock Out Crime - Home Security - Exterior** This fact sheet gives you suggestions on how to improve security from the exterior of your home through lighting strategies and home visibility. Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - L'extérieur
65531	CE66C	**How to Lock Out Crime - Home Security—Alarms** This fact sheet gives you information to help you decide whether an installed burglar alarm is the right choice for you. Two types of systems are discussed, the perimeter alarm system and the area alarm system. Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les avertisseurs
65533	CE66D	**How to Lock Out Crime - Home Security - Doors** This fact sheet suggests ways you can improve your door security. Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les portes

Order no.	Series no.	Title
65535	CE66E	**How to Lock Out Crime - Home Security - Windows** This fact sheet suggests ways to improve the security performance of your windows. Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les fenêtres
65537	CE66F	**How to Lock Out Crime - Home Security - Patio Doors** This fact sheet suggests ways to improve the security of one of the favourite targets of burglars: patio doors. Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les portes-fenêtres
65539	CE66G	**How to Lock Out Crime: Home Security -- Common Sense** Even if all the required bolts, hinges, latches and alarms have been installed, good home security cannot be achieved without first adopting the common-sense precautions outlined in this fact sheet. Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Une affaire de bon sens
66343	CE67	**Attached Garages and Indoor Air Quality** Attached garages, while convenient, can move vehicle-based pollutants into houses. The document shows how to avoid this source of pollution. Aussi disponible en français sous le titre : Les garages attenants et la qualité de l'air intérieur
66497	CE68	**Secondary Suites** Secondary suites can provide affordable living space and intensify urban development without adding new buildings. This article explains what the homeowner should consider before building or renovating a secondary suite. Aussi disponible en français sous le titre : Appartements accessoires
65548	CE70	**EQuilibrium: Healthy Housing for a Healthy Environment** CMHC's EQuilibrium housing initiative is a powerful new movement in sustainable housing. It can help homeowners reduce their energy bills, protect their families' health, reduce greenhouse gas emissions, and keep the environment clean for generations to come. Aussi disponible en français sous le titre : Equilibrium : maison saine pour un environnement sain

Order no.	Series no.	Title
63419	AE1	**Solving Odour Transfer Problems in Your Apartment** One of the most common problems experienced by the occupants of apartment buildings is the transfer of objectionable odours from one apartment to another. Tobacco smoke and cooking odours top the list of complaints. This fact sheet explains how odours are transferred, and offers a number of potential solutions. Some are very easy to implement and others should be done with the agreement of the building management. Some are trial and error. Solving the problem can take perseverance. Aussi disponible en français sous le titre : Enrayez la transmission d'odeurs dans votre appartement
63904	AE2	**Reducing Noise in Your Apartment** This article provides basic information about the behaviour of sound and noise and suggests ways to improve the peace and tranquility in your apartment or condominium. Aussi disponible en français sous le titre : Atténuation du bruit dans votre appartement
65013	AE3	**Dealing with Power Outages** Lengthy power outages rarely occur in Canada, but when they do, they can affect your comfort and safety. This fact sheet, intended specifically for occupants of multi-unit residential buildings, will help you plan ahead for, and deal with, power outages in your apartment building. Topics include, amongst others, contents of an emergency kit, use of alternate power, and summer and winter power failures. Aussi disponible en français sous le titre : Les pannes de courant
65050	AE4	**Fire Safety** Each year, many Canadians are injured or die in house or apartment fires. This fact sheet, intended specifically for occupants of multi-unit residential buildings, offers practical fire prevention tips and important information regarding smoke alarms. It will also help you create an escape plan for you and your family, and instruct you on what to do should a fire occur in your apartment. Aussi disponible en français sous le titre : La sécurité-incendie
65041	AE5	**Improving Your Security and Safety** This About Your Apartment fact sheet, intended specifically for occupants of multi-unit residential buildings, provides practical advice on how to protect yourself, your family, and your belongings. It highlights the types of security and safety features you may have in your building and how to use them effectively. Topics include, amongst others, proper locks for windows and doors, neighbourhood security, preventing falls from windows and balconies, combustion safety, and carbon monoxide. Aussi disponible en français sous le titre : Pour une meilleure sécurité chez soi

Order no.	Series no.	Title
65297	AE6	**Dealing with Pests** Most people can relate to the surprise, shock and revulsion of coming across pests in their homes. This fact sheet, intended specifically for occupants of multi-unit residential buildings, will help you prevent and reduce infestations in your apartment by describing how insects enter homes and what they need to survive. Topics include pest proofing your apartment, Integrated Pest Management (IPM), and health concerns associated with pests and pesticides. Aussi disponible en français sous le titre : La lutte contre les parasites
66002	AE7	**The Tenant's Guide to Mold** This fact sheet is intended for people living in rented apartments and offers practical information on mold problems beginning with an overview of mold and its causes, why it is a concern, and how to identify a mold problem and estimate its severity. Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des locataires
65975	AE8	**Energy and Water Saving Tips for Your Apartment** This fact sheet has energy- and water-saving tips that can save you money and make your apartment more comfortable. It lists things you can do yourself and things you can do in co-operation with your building's management Aussi disponible en français sous le titre : Conseils pour économiser l'énergie et l'eau dans votre appartement

ABOUT YOUR HOUSE - **NORTH SERIES**

VOTRE MAISON - **DOSSIER DU NORD**

The North About Your House series is a series specifically designed around day to day northern solutions as well as innovative northern models of building practices which work under cold climate conditions. In this series you will find examples of how to use structural panels in the high arctic, means to cleanse wastewater in the North as well as demonstrated ways of constructing a roof which can withstand northern conditions and how to choose a foundation system which will work in any of the northern communities.

Order no.	Series no.	Title
62303	North Series 1	Building with Structural Panels -- Repulse Bay
62304	Dossier du Nord	Maison à panneaux isolants de construction à Repulse Bay
62295	North Series 2	On-site Wastewater Reclamation Systems for the North
62297	Dossier du Nord 2	Installations de recyclage sur place des eaux usées dans le nord
62329	North Series 3	Snowshoe Inn, Fort Providence Co-generation Model
62330	Dossier du Nord 3	Modèle de cogénération du Snowshoe Inn, Fort Providence
62298	North Series 4	Residential Foundation Systems for Permafrost Regions
62299	Dossier du Nord 4	Fondations pour les bâtiments résidentiels construits sur le pergélisol
62154	North Series 5	Eagle Lake Healthy House
62155	Dossier du Nord 5	La maison saine d'Eagle Lake
62313	North Series 6	Arctic Hot Roof Design
62314	Dossier du Nord 6	Conception de toits chauds pour climat arctique
63050	North Series 8	How to Prevent Plumbing and Heating Vent Stack Freeze-up
63051	Dossier du Nord 8	Prévenir le gel des colonnes de ventilation de plomberie et des conduits d'évacuation de l'appareil de chauffage
63394	North Series 9	Fancoil Integrated Combination Heat and Domestic Hot Water Systems
63395	Séries du Nord 9	Installation de chauffage des locaux et de l'eau intégrée à un ventilo-convecteur

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Brief descriptions of CMHC research papers you may wish to obtain. These research highlights are available in HTML and Adobe Acrobat format (pdf) on the CMHC web site at:

http://www.cmhc-schl.gc.ca/publications/en/rh-pr/index.html

Print copies can be obained by calling **1-800-668-2642**

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67085	10-102	Increasing Nunavut Housing Ventilation Rates with HRVs
67067	10-100	Cold Climate Radon Mitigation
66702	09-112	Sloping Sand Filters for On-Site Wastewater Treatment
66608	09-111	Effectiveness of HEPA Vacuuming on Mold in Houses
66602	09-110	Evaluating the Feasibility and Developing Design Requirements and Tools for Large-scale Rainwater Harvesting in Ontario
66590	09-109	Ecologically Engineered Stormwater Management — Five Case Studies
66598	09-108	Assessment of Ecologically Engineered Stormwater Management
66569	09-107	Monitoring Results for the Factor 9 Home
66555	09-106	Effectiveness of Dehumidifiers in Controlling Moisture in Houses
66564	09-105	Understanding Vapour Permeance and Condensation in Wall Assemblies
66541	09-104	The Northern Sustainable House: An Innovative Design Process
66474	09-103	Canada at the 2007 Solar Decathlon Competition
66476	09-102	Code Requirements and Costs of Incorporating Accessory Apartments in Houses
66373	09-101	Seabird Island Monitoring
66333	09-100	Long Term Performance of Slab-on-Grade House Foundations in Regina, Saskatchewan
66135	08-107	Effect of Mesh and Bale Orientation on the Strength of Straw Bale Walls
66097	08-106	Analysis of Renewable Energy Potential in the Residential Sector through High-Resolution Building-Energy Simulation
66063	08-105	Fixing Houses with High Radon -A Canadian Demonstration
66060	08-104	Approaching Net-Zero Energy in Existing Housing
65961	08-103	Laboratory Depressurization Test for Residential Gas Appliances - Part 2
65916	08-102	Development and Assessment of Crawl Space Remediation Strategies

Order no.	Series no.	TITLE
65830	08-101	Benchmarking Home Energy Savings from Energy-Efficient Lighting
65903	08-100	Assessment of Natural Ventilation for Canadian Residential Buildings
65861	07-124	Residential Solar Mass Wall Analysis for Canada
65843	07-123	Understanding Vapour Permeance and Condensation in Wall Assemblies
65828	07-122	Straw Bale Construction in Atlantic Canada
65834	07-120	The Effects of Programmable Fan Conrollers on Ventilation, Air Distribution and Energy Use
65863	07-119	Monitored Thermal Performance of ICF Walls in MURBs
65891	07-118	Preserved Wood as a Potential Source of Arsenic and Fungi in the Foundation Walls of Homes
65684	07-117	Investigation of the Performance of Residential Electronic Filters in Actual Use
65680	07-116	Drainwater Heat Recovery Performance Testing at CCHT
65649	07-115	Whistle Bend Planning and Design Charrette
65546	07-114	Wind-Rain Relationships in Southwestern British Columbia
65322	07-113	Sustainable Northern Development Charrette in Yellowknife
65302	07-112	Research on Green Rooftops and Walls in Québec City
65417	07-111	Field Testing of Valved Soffit Vent Performance in Protecting Roof and Attic in Strong Winds
65378	07-110	Action Plan for Sustainable Practices - Implementation Strategies for the Residential and Business Sections in the Greater Toronto Area
65365	07-109	Testing Oil-fired Appliance Depressurization Spillage
65352	07-108	Boiler Piping Study
65350	07-107	Southeast False Creek Integrated Design Process Workshops
65375	07-106	Evaluation of Water-Efficient Toilet Technologies to Carry Waste in Drainlines
65033	07-105	Performance Evaluation of Retrofitted Solid Masonry Exterior Walls
65421	07-104	High-Performance Stucco for Housing
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65295	07-102	The Effects of Reflective Interior Shades on Cooling Energy Consumption at the CCHT Research Facility
65336	07-101	A Discussion Paper: Indoor Air Quality Investigations of Houses used for Marijuana Grow Operations
65344	07-100	Relationship Between Moisture Content and Mechanical Properties of Gypsum Sheathing
65104	06-114	Old North End, Saint John, New Brunswick Community Planning and Housing Charrette
65187	06-113	Green Roofs: A Resource Manual for Municipal Policy Makers
65100	06-112	Arviat Community and Housing Design Charrette
65259	06-111	Validation of an Onsite Wastewater Risk Assessment Model
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65243	06-108	Field Assessment of a NuAir AIMS eKOCOMFORT™ Unit
65245	06-107	The eKOCOMFORT Field Assessment Program
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65035	06-104	Household Environmental Monitoring - A Strategy to Help Homeowners Reduce Their Environmental Impact
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65002	06-102	Evaluation of Air Leakage Control Measures to Compartmentalize Newly Constructed Suites in a High- Rise Residential Building
64934	06-101	Green Phoenix Integrated Design Charrette for Sustainable Affordable Housing
64958	06-100	Performance Evaluation of the Almon Street Multi-Unit Residential Building
64942	05-120	Investigating Moisture in Seasonal Housing
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64911	05-117	Predicting Time to Fogging of Insulated Glass Units
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64908	05-115	Study of Poured-in Place Concrete Wall Assemblies in Coastal British Columbia
64855	05-114	Reduction of Airborne Particles in Houses with Occupants Having Respiratory Ailments
64904	05-113	Duct Leakage Tests in Small Diameter Ducting System
64853	05-112	Assessment of Suite Compartmentalization and Depressurization in New High-rise Residential Buildings
64806	05-111	Laboratory Depressurization Test for Residential Gas Appliances
64843	05-110	Remote Monitoring and Control of On-site Wastewater Treatment, Recycling, and Reuse Systems
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63612	04-116	Energy Needs and Availability in Housing
63571	04-115	Building Canada: Phase One
63555	04-114	Investigating Claims Against Home and Property Inspectors
63557	04-113	Installation Guide for Residential Wood I-Joist Floor Systems
63547	04-112	Canadian Home Inspectors and Building Officials National Initiative Phase II: Development of National Certification and Accreditation Models
63528	04-111	Characterizing the Condominium Population of the Greater Ottawa Area, 1969-2002
63540	04-110	Strategies for Reducing Building Energy Use Via Innovative Building Envelope Technologies
63511	04-109	Maximum Performance Testing of Popular Water-Efficient Toilet Models
63542	04-108	Garage Performance Testing
63503	04-107	Survey of In-Suite Space and Domestic Hot Water Heating Systems In Multi-Residential Buildings
63400	04-105	Field Testing of an Integrated Ventilation Space Conditioning System for Apartments
63413	04-104	Practical Measures for the Prevention of Basement Flooding Due to Municipal Sewer Surcharge
63407	04-103	House Dust: A Useful Tool To Assess Microbial Contamination In Homes
63390	04-102	Calgary Integrated Design and Sustainable, Affordable Housing Charrette
63365	04-101	Residential Combustion Spillage Monitoring
63376	04-100	Improved Make-up Air Supply Techniques
63382	03-134	Safe Housing for Lightly Contaminated Lands

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
63370	03-133	Residential Combustion Venting Failure - A Systems Approach
63374	03-131	The Canadian Residential Duct and Chimney Survey
63326	03-129	Monitoring the Performance of a Retrofitted Preserved Wood Foundation
63333	03-128	Review of Hygrothermal Models for Building Envelope Retrofit Analysis
63328	03-127	Static and Dynamic Earthquake Testing of Rainscreen Stucco Systems for B.C. Residential Wood-Frame Construction
63339	03-125	Water Penetration Resistance of Windows - Study of Codes, Standards, Testing and Certification
63367	03-124	Water Penetration Resistance of Windows: Study of Manufacturing, Building Design, Installation and Maintenance Factors
63315	03-123	Integrated Community Solutions: Regina's Affordable, Sustainable Housing Design Charrette
63294	03-122	The Impact of Requiring HVAC System Design Submittal on System Performance
63280	03-121	Ventilation Systems for Multi-Unit Residential Buildings: Performance Requirements and Alternative Approaches
63243	03-119	Reduction of Air Intake Contamination in High-Rise Residential Buildings
63257	03-118	Investigation of a Ground-Source Heat Pump Retrofit to an Electrically Heated Multi-Family Building
63237	03-117	Influence of an Electronic Air Cleaner on Indoor Ozone
63225	03-116	Qualification of the Degree of Acoustic Comfort Provided by Multi-Family Buildings - Phase II
63233	03-115	Case Studies of Major Energy Retrofits
63208	03-114	Technology Roadmap for Intelligent Buildings
63223	03-113	Dawson City Demonstration Monitoring Northern Ventilation
63206	03-112	Guidelines for On-Site Measurement of Moisture in Wood Building Materials
63204	03-111	Comparison of Modeled and Monitored Performance of a Wall Insulation Retrofit in a Solid Masonry Building
63214	03-110	Integrated Design Charrette for a Sustainable UniverCity Community
63200	03-109	Proper Retrofit Furnace Sizing

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
63188	03-108	Re-Sale of Leaky Condos: Did the Buyer Know?
63194	03-107	Design of Durable Joints Between Windows and Walls
63192	03-106	Cooling Rates of Houses During Extended Power Failures
63190	03-105	Penetration of Outdoor Particles Into a Residence
63186	03-104	Indoor Particulate and Floor Cleaning
63182	03-103	Incompatible Building Materials
63175	03-102	Seville Theatre Redevelopment Project: Integrated Design Process
63172	03-101	Mandatory Home Inspections on Resale Homes in Ontario
63132	03-100	Rain Water Harvesting and Grey Water Reuse
63102	02-137	Multi-Residential High Efficiency Clothes Washer Pilot Project
63065	02-135	Monitored Performance of an Innovative Multi-Unit Residential Building
62637	02-133	Positive Pressure Ventilation for High-Rise Buildings
63035	02-132	Alternative Wall Systems for Low-Rise Housing
63053	02-130	Evaluation of Vapour Diffusion Ports on Drying of Wood-Frame Walls Under Controlled Conditions
63044	02-129	Investigation Protocol for Evaluation of Post-Tensioned Buildings
63019	02-128	"Northern Landscaping: A Guide to Restoring Plants and Soil in Northern Communities"
63015	02-127	LeBreton Flats District Heating System Performance Assessment
63017	02-125	Healthy Indoors: Achieving Healthy Indoor Environments in Canada
62995	02-124	Dual-Flush Toilet Testing
62997	02-123	Green Roof Infrastructure Workshop
63022	02-120	Study of High-Rise Envelope Performance in the Coastal Climate of British Columbia
62976	02-118	Compliance of Ventilation Systems Installed to Meet Proposed Changes to the 1995 NBCC
63104	02-117	Research Project on the Noise Produced by DWV Pipes Made of Cast Iron, PVC and ABS
62894	02-116	Wood Usage in Straw Bale House Construction
62892	02-115	Energy Use in Straw Bale Houses

Order no.	Series no.	TITLE
62890	02-114	Defining the Convective Driving Force for Soil Gas Intrusion into Houses
63116	02-112	Community Energy Management – Foundation Paper
62881	02-109	Composite Masonry Wall Ties
62888	02-108	Noise Isolation Provided by Gypsum Board Partitions
62955	02-105	Achieving Healthy Indoor Environments: A Review of Canadian Options
62944	02-104	Technology Dissemination: Triggering Innovation Adoption in Canada's Home Construction Industry
62950	02-103	Moldy Houses: Why They Are and Why We Care & Additional Analysis of Wallaceburg Data: the Wallaceburg Health and Housing Studies
62968	02-102	Transforming Your Practice: Integrated Design Charrettes for Sustainable Buildings
62876	02-101	Healthy High-Rise: A Guide to Innovation in the Design and Construction of High-rise Residential Buildings
62960	02-100	Final Assessment of Conservation Co-op's Greywater System
62799	01-143	Independent 6 L Toilet Testing Program
62747	01-142	Analysis of the Annual Energy and Water Consumption of Apartment Buildings in the CMHC HiSTAR database
62745	01-141	The Sustainable Home Water System
62743	01-140	2001 Building Failures Study
62741	01-139	The Envelope Drying Rates Analysis Study
62739	01-138	Innovative On-Site Wastewater Treatment
62737	01-137	Evaluation of Urban Drainage for Basement Flood Proofing
62735	01-136	Protection of Basements Against Flooding Trends and Impacts of Drainage Regulations
62731	01-134	Technical Impediments to Use of the Existing On-Site Sewage System of Host House to Service Garden Suite on Same Property
62729	01-133	Lower Cost Alternative for Municipal Sewer Inspection and Maintenance
62727	01-132	Assessment of the Takla Landing Contour Trench Wastewater Disposal System
62723	01-130	The Ontario Wall Drying Project Phase 2

Order no.	Series no.	TITLE
62721	01-129	The Ontario Wall Drying Project (1991)
62715	01-126	Monitoring of Cavity Humidity Levels at Canada Life Building
62713	01-125	A Commissionable Air Barrier System for the Building Envelope
62709	01-123	Air Leakage Characteristics, Test Methods and Specifications for Large Buildings
62707	01-122	Air Infiltration from Attached Garages in Canadian Houses
62705	01-121	Canadian Municipal Water Conservation Initiatives
62701	01-119	The BREEAM Green Leaf Environmental Assessment Protocol for Multi-Residential Buildings
62699	01-118	Quality Assurance Protocol Test Drive by CMHC and Polygon Construction Management Ltd
62697	01-117	Stormwater Management Alternatives
62693	01-115	Commissioning Guide for the Toronto Healthy Houses Water Systems
62691	01-114	Peak-Day Irrigation Demand Reduction Monitoring
62689	01-113	Evaluating the Performance of On-Site Sewage Disposal Systems
62687	01-112	Advancing the "Light Grey Option": Making Residential Greywater Use Happen
62685	01-111	Estimation of the Contribution of Phosphorus From On-Site Sewage Disposal Systems to Lakes
62679	01-108	Domestic Cold Water Booster Pump Control Monitoring Pilot Program
62677	01-107	Impact of Added Insulation on Air Leakage Patterns
62675	01-106	Thermostat Settings in Houses with In-floor Heating
62673	01-105	Case Study on Basement Renovations
62671	01-104	Monitoring the Performance of an EIFS Retrofit on a 15-Storey Apartment Building
62669	01-103	Energy Use Patterns in Off-Grid Houses
62667	01-102	"Plex" Housing: A Renewed Tradition
62665	01-101	Greenbacks from Green Roofs: Forging a New Industry in Canada
62663	01-100	WATERSAVE: Water Reclamation System Design Tool
62661	00-147	Investigation of Black Soot Staining in Houses

Order no.	Series no.	TITLE
62659	00-146	Ten Steps to a Cooler Planet
62655	00-144	Retrofitting Ventilation Into Low-Rise Housing
62653	00-143	Low Temperature Heating
62651	00-142	Elastomeric Membrane Installations in Parking Garages (1992)
62647	00-140	Compendium of Research on the Conservation Co-op Building
62643	00-138	Performance of a Brick Veneer/Steel Stud Wall System
62635	00-134	The Renovation of an Apartment Building with Solid Masonry Walls
62633	00-133	Renovating Distinctive Homes: 1½ Storey Post-War Homes
62631	00-132	Moisture Properties of Plaster and Stucco for Straw Bale Buildings
62629	00-131	Canadian Home Inspectors & Building Officials National Initiative
62627	00-130	Airtightness of Concrete Basement Slabs
62625	00-129	Extent of Carbonation in Buildings in Toronto
62623	00-128	Parking Structure Deterioration: A Survey and Analysis of its Extent and Influencing Factors
62617	00-125	Deterioration of Parking Structures: Extent, Causes and Repair Considerations
62615	00-124	Cost-Effective Concrete Repair: Research, Investigation, Analysis, and Implementation
62613	00-123	Optimization of Impact Sound Insulation in Steel Frame Floors in Residential Buildings
62611	00-122	Study of the Noise Generated by Heat Pumps in Residential Areas
62607	00-120	Exterior Insulation and Finish Systems (EIFS): Problems, Causes and Solutions
62605	00-119	Measured Pressure Equalized Performance of an Exterior Insulation Finish System (EIFS) Specimen
62603	00-118	Performance Evaluation of Water Repellents for Above-Grade Masonry
62601	00-117	Mechanical and Electrical Systems in Apartments and Multi-Suite Buildings: A Practitioner's Handbook
62599	00-116	Voices for Safe Neighbourhoods: Awareness and Assessment Mean Action
62597	00-115	Building Envelope Rehabilitation Consultant Guide and Owner/Property Manager Guide

Order no.	Series no.	TITLE
62595	00-114	Service Life of Multi-Unit Residential Building Elements and Equipment
62593	00-113	Determination of Water Vapour Diffusion Across Brick Masonry Treated With Water-Repellent Sealers
62591	00-112	Wall Moisture Problems in Alberta Dwellings
62589	00-111	Rigid Air Barrier Assemblies
62587	00-110	Review of OHC Building Energy and Water Audits
62585	00-109	Summary Report for Consortium on Fire Resistance and Sound Insulation of Floors: Sound Transmission Class and Impact Insulation Class Results
62579	00-106	Field Tests of Ventilation Systems Installed to Meet the 1993 OBC and 1995 NBC
62577	00-105	Sound Transmission Loss Measurements Through 190 mm and 140 mm Blocks With Added Drywall and Through Cavity Block Walls (1990)
62575	00-104	Corridor Air Ventilation System Energy Use in Multi-Unit Residential Buildings
62573	00-103	Straw Bale House Moisture Research
62571	00-102	Measured Pressure Equalized Performance of an Exterior Insulation Finish System (EIFS) Specimen
62569	00-101	Measured Pressure-Equalized Performance of a Brick Veneer/Steel Stud Assembly
62567	00-100	Measured Pressure-Equalized Performance of Two Precast Concrete Panels

NOTE: Consult the Technical Research Highlights prior to the year 2000 at http://www.cmhc.ca/publications/en/rh-pr/tech/techdblist.cfm.

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Brief descriptions of CMHC research papers you may wish to obtain.

These research highlights are available in HTML and Adobe Acrobat format (pdf) on the CMHC web site at: http://www.cmhc-schl.gc.ca/publications/en/rh-pr/index.html

Print copies can be obtained by calling 1-800-668-2642

Order no.	Series no.	TITLE
67089	10-015	2001 Participation and Activity Limitation Survey: Issue 9 — Profile of the Housing Conditions of Canadian Children with Disabilities
67051	10-014	2001 Participation and Activity Limitation Survey: Issue 8 — Profile of the Housing Conditions of Seniors with Disabilities
67045	10-013	2001 Participation Activity Limitation Survey: Issue 7 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Developmental Disability
67043	10-012	2001 Participation Activity Limitation Survey: Issue 6 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Speaking/Communicating Disability
67041	10-011	2001 Participation Activity Limitation Survey: Issue 5 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Learning Disability
67039	10-010	2001 Participation and Activity Limitation Survey: Issue 4 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with an Emotional/Psychological Disability
66998	10-009	Building Community: The Story of Supportive Housing for Young Mothers (SHYM)
67031	10-008	Effect of Snow and Ice on Exterior Ramp Navigation by Wheelchair Users
67033	10-007	Affordable Housing for Families: Assessing the Outcomes
67037	10-006	2001 Participation and Activity Limitation Survey: Issue 3 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Hearing Disability
67035	10-005	2001 Participation and Activity Limitation Survey: Issue 2 — Profile of the Housing Conditions of Canadians aged 15 Years and Older with a Seeing Disability
66954	10-003	Comparing Canadian New Urbanist and Conventional Suburban Neighbourhoods
66808	10-002	Longitudinal Study of Housing for Mental Health Consumer-Survivors
66751	10-001	Overview of the Current State of Knowledge on Societal Outcomes of Housing

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
66748	09-024	2006 Census Housing Series: Issue 6 — Off-reserve Status Indian Households: Housing Conditions and Core Housing Need
66640	09-023	Inventory and Assessment of Sustainable Community Best Practice Guides for the Canadian Housing Sector
66634	09-022	2006 Census Housing Series: Issue 5 — Canada's Census Metropolitan Areas (CMAs)
66611	09-021	Recycling Catholic Convents and Religious Institutional Buildings into Affordable and Alternative Housing: Three Case Studies
66642	09-020	Livable Lanes: A Study of Laneway Infill Housing in Vancouver and Other Growing B.C. Communities
66606	09-019	Extended Characterization of Individuals Experiencing Occasional and Persistent Core Housing Need (2002-2004)
66627	09-018	Transit-Oriented Development (TOD): Canadian Case Studies
66560	09-016	2006 Census Housing Series: Issue 4 — Growth in Household Incomes and Shelter Costs, 1991-2006
66539	09-015	PerthWorks — A Small Town Sustainable Neighbourhood Project
66553	09-014	2001 Participation and Activity Limitation Survey: Issue 1 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Mobility and/or an Agility Disability
66472	09-013	Impact of Economic Cycles on the Incidence of Core Housing Need in Canada
66464	09-012	Housing Persons With an Intellectual Disability in Intentional Communities: Identifying Relevant Physical and Governance Structures
66422	09-011	Preconditions Leading to Market Housing on Reserve
66418	09-010	Rivergreen Ecovillage Design Charrette, Saskatoon
66401	09-009	Government-imposed Charges On New Housing In Canada
66389	09-008	Affordability Challenges and Rental Market Dynamics in Small Nova Scotia Communities with Community College Campuses
66303	09-007	2001 Census Housing Series: Issue 14 Household Mobility and Core Housing Need
66383	09-006	2006 Census Housing Series Issue 3 — The Adequacy, Suitability, and Affordability of Canadian Housing, 1991 - 2006
66360	09-005	2006 Census Housing Series Issue 2: the Geography of Core Housing Need, 2001 - 2006

Order no.	Series no.	TITLE
66381	09-003	Affordability Trends 1981–2001: An Analysis of Selected Metropolitan Regions in Canada
66387	09-002	Settling In: Newcomers in the Canadian Housing Market, 2001–2005
66391	09-001	Low-Income Urban Households Not in Core Housing Need
66337	08-020	Breaking Ground: A Fused Grid Neighbourhood in Calgary
66279	08-018	2001 Census Housing Series Issue 13: Housing Conditions of Women and Girls
66206	08-017	Adapting Your Home to Living with Dementia
66141	08-016	2001 Census Housing Series: Issue 12 – Housing Conditions of Visible Minority Households in Canada
66139	08-015	City of Dryden-Sustainable Waterfront Development Plan
66099	08-014	Community Indicators for an Aging Population
66086	08-013	Giving Pedestrians an Edge—Using Street Layout to Influence Transportation Choice
66071	08-012	Taming the Flow — Better Traffic and Safer Neighbourhoods
65959	08-011	Understanding the Status of Visitability in Canada
65674	08-010	Neighbourhood Effects and Concentration Levels of Aboriginal People in Large Canadian Cities
66004	08-009	Adapting Homes to Extend Independence - Case Study of 13 Frail Seniors in Quebec City Suburbs
65935	08-008	The Role of Housing in Aboriginal Student Success - Post-Secondary Institutions in Vancouver
65590	08-006	Feasibility of Risk Management as a Subject for Capacity Building in First Nations Communities
65845	08-004	2006 Census Housing Series Issue 1: Demographics and Housing Construction
65913	08-003	Impacts of the Aging of the Canadian Population on Housing and Communities
65901	08-002	The Dynamics of Housing Affordability
65933	08-001	Life Cycle Costing Tool for Community Infrastructure Planning
65836	07-022	2001 Census Housing Series Issue 11: Profile of the Housing Conditions of Persons with Disabilities
65682	07-018	Housing Situation and Needs of Recent Immigrants in Montreal, Toronto, and Vancouver

Order no.	Series no.	TITLE
65672	07-017	Supportive Housing for Homeless and Hard-to-House Seniors: An In-Depth Case Study
65670	07-016	How Effective Are Bathtub Grab Bars for Stopping a Fall When You Loose Your Balance?
65660	07-015	The Old Grace Hospital Site Charrette
65658	07-013	A Plan for Rainy Days: Water Runoff and Site Planning
65560	07-011	Growth Management and Affordable Housing in Greater Toronto
65553	07-010	Housing Issues Facing Seasonal Workers
65550	07-009	Fire Prevention in Aboriginal Communities Manual and DVD
65644	07-008	Urban Acupuncture - A Methodology for the Sustainable Rehabilitation of "Society Buildings" in Vancouver's Chinatown into Contemporary Housing
65429	07-007	Urban Form and Social Inclusion
65427	07-006	An Examination of Life Lease Housing Issues
65431	07-005	Case Study: A Geographic Information System (GIS) as a Tool for First Nations Housing Management, Planning and Safety
65424	07-004	West Hills Subdivision Sustainable Development Charrette
65361	07-003	Wood Buffalo Affordable Housing Project Charrette
65348	07-002	Establishing the National Council on Self-Help Housing
65340	07-001	Housing Options Upon Discharge from Correctional Facilities
64804	06-024	Urban Aboriginal Households: A Profile of Demographic, Housing and Economic Conditions in Canada's Prairie and Territories Region
65308	06-023	Senior's Housing for seniors: A Feasibility Study
65293	06-022	Impact of the 2010 Winter Olympic Games on the Vancouver and Sea-to-Sky Housing Markets
65253	06-021	Structural Analysis of Montreal's Real Estate Market
65231	06-020	Requalification of Suburbs and Regulatory Frameworks: Current Situation and Easing Measures
65235	06-019	Profile of Rooming House Residents
65233	06-018	Establishing On-reserve Housing Authorities
65220	06-017	Profile and Prospects of the Factory-built Housing Industry in Housing

Order no.	Series no.	TITLE
65185	06-016	Gaining Community Acceptance of Affordable Housing Projects and Homeless Shelters
65218	06-015	Brownfield Redevelopment for Housing: Case Studies
65216	06-014	Impacts of Ethnic Changes on the Housing Market in the Rivière-des-Prairies District of Montréal
65183	06-013	Saline Creek Plateau Sustainable Community Design Charrette
65291	06-012	Renovation and Repair Referral and Advisory Service for Seniors and Others Who Are Homeowners
65086	06-011	Housing Allowance Options for Canada
65096	06-010	Housing Discrimination Against Victims of Domestic Violence
65048	06-009	The Economic Impact of Residential Construction on Reserves
65011	06-008	Housing for Adults with Intellectual Disabilities
65017	06-007	The Transferability of the "Safe in the City" Approach to Youth Homelessness Prevention in Canada
65025	06-006	Accessory Apartment Regulations in Census Metropolitan Areas in Canada
64990	06-005	Estimates of the Private and Societal Costs and Benefits of Homeownership in Selected Canadian Cities
64984	06-004	Issues, Impediments and Opportunities to Using Designated Land On-reserve for Affordable Housing
65006	06-003	Household Income, Net Worth and Housing Affordability in Canada
64981	06-002	The Rutland Transit Centre Design Workshop - Kelowna, British Columbia
64992	06-001	2001 Census Housing Series Issue 10: Aging, Residential Mobility and Housing Choices
64944	05-038	A Framework for Cost-Benefit Analysis of HASI and RRAP-D
64936	05-037	Student Housing in Canada: Developing a Methodology to Collect Data and Information
64931	05-036	Smart Growth in Canada: A Report Card
64906	05-035	Cost Effectiveness of Eviction Prevention Programs
64900	05-034	An Exploration of Housing Options for Aboriginal People in Edmonton, Alberta and Winnipeg, Manitoba
64903	05-033	Life Lease Supportive Housing: Combining the Best Aspects of Housing and Complex Care

Order no.	Series no.	TITLE
64897	05-032	Sustaining the Non-Profit Housing Sector in British Columbia
64863	05-031	Searchable Database of Supportive Housing for Seniors in Canada
64861	05-030	Architecture for Elder Health in Remote British Columbia: A Nisga'a-led Research
64851	05-029	Issues and Strategies for Shared Accommodation
64031	05-027	Homelessness, Housing and Harm Reduction: Stable Housing for Homeless People with Substance Use Issues
64845	05-026	Temporary Supportive Housing for Aboriginal People and Their Families
63931	05-024	Case Study on the Carma Centre for Excellence in Home Building and Land Development
64126	05-023	Costing Mechanism to Facilitate Sustainable Community Planning - Background Research and Costing Framework
64062	05-022	Sustainability, Planning Practice, Housing Form and Environmental Protection in the Toronto Region's Oak Ridges Moraine
63653	05-021	Uses of Development Cost Charges
63975	05-020	A Legal Framework for Supportive Housing for Seniors: Options for Canadian Policy Makers
64121	05-019	Social Housing in the Context of Rural Depopulation
63950	05-018	Homeless Applicants' Access to Social Housing
63972	05-017	Acceptance of Manufactured Housing in First Nations Communities in Atlantic Canada
63970	05-016	City of Yorkton Downtown Redevelopment Planning Charrette
63981	05-014	Variations in Housing Prices in Canada
63948	05-013	Brownfield Redevelopment for Housing: Literature Review and Analysis
63918	05-012	The Impact of Zoning and Building Restrictions on Housing Affordability
63916	05-011	Measuring the Effort Needed to Climb Access Ramps in a Manual Wheelchair
63913	05-010	Critical Success Factors for Community Land Trusts in Canada
63922	05-009	Housing and Non-housing Construction Labour
63906	05-008	Evaluating Arterial Road Configuration Options for a New Community

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
63844	05-007	Variability in Construction Insurance and Alternative Insurance Solutions
63820	05-006	2001 Census Housing Series Issue 9 Revised: The Housing Conditions of Canada's Seniors
63814	05-005	Maintenance and Renovation: Opportunities to Improve Accessibility to Existing Residential Buildings
63840	05-004	2001 Census Housing Series Issue 8 Revised: Households Spending at least 50% of their Income on Shelter
63802	05-003	Housing Stability Validity Study
63812	05-002	Women Offenders: Characteristics, Needs and Impacts of Transitional Housing
63834	05-001	Aboriginal Housing: Local Materials and Design Preferences
63882	04-043	First Nation Economies: A Comparative Perspective. A Socio-Economic Baseline Study Between First Nation Communities and Non-First Nation Communities
63810	04-042	2001 Census Housing Series Issue 7 Revised: Immigrant Households
63797	04-041	Initial Demographic Analysis of the Home-Building Industry and Succession Planning
63795	04-040	Filtering in Housing
63758	04-039	Evolving Housing Conditions in Canada's Census Metropolitan Areas, 1991-2001
63760	04-038	Applying Fused Grid Planning in Stratford, Ont.
63692	04-037	Ideas that Work: Best Practices in Affordable Housing Management
63695	04-036	2001 Census Housing Series Issue 6 Revised: Aboriginal Households
63685	04-035	Developing a Methodology for Tracking Homeless People over the Long Term
63618	04-033	A Review of Training and Delivery Options Concerning Aboriginal Housing
63592	04-032	An International Comparison of Housing Need Indicators in Australia, Canada, England and the United States
63600	04-031	An Examination of the use of Domestic Space by Inuit Families Living in Arviat, Nunavut
63639	04-030	The National Summit on Affordable Homeownership

Order no.	Series no.	TITLE
63596	04-029	Comprehensive Community Planning: Experiences in Aboriginal Communities
63573	04-028	Intergenerational Homesharing and Secondary Suites in Quebec City Suburbs
63580	04-027	2001 Census Housing Series: Issue 5 - Growth in Household Incomes and Shelter Costs, 1991-2001
63575	04-026	Strategies to Preserve the Existing Rental Housing Stock in Greater Vancouver
63561	04-025	Refugee Housing Information Needs: Research Conducted in the Region of Niagara
63551	04-024	Assessment of the Outcomes for Habitat for Humanity Homebuyers
63526	04-022	UniverCity: Assessing Consumer Demand for Sustainable Development
63501	04-021	Residential Integration of Youth Migrants in Quebec
63518	04-020	The Impact of the 1988 Basel Capital Accord and Prognosis for the Future
63509	04-019	Housing, Long Term Care Facilities, and Services for Homeless and Low-income Urban Aboriginal People Living with HIV/AIDS
63507	04-018	Lessons Learned from the Use of Performance Assessment Measures to Implement Sustainable Communities
63445	04-017	Transitional Housing: Objectives, Indicators of Success and Outcomes
63463	04-016	Housing and Population and Health - Research Framework
63440	04-014	Residential Intensification Case studies: Built Projects
63372	04-013	Insurance In Residential Construction: An Environmental Scan
63428	04-012	Consumer Support and Protection in Mortgage and Home Equity Based Borrowing: The U.S. Experience and Canadian Comparisons
63434	04-011	Town of Milton Eco-tech Village Pilot Project Urban Design Charrette: Making Choices Towards Sustainability
63438	04-010	Housing Education Program: Eastmain Pilot Project
63415	04-009	Quantifying Universal Design: A Program for Implementation
63584	04-008	2001 Census Housing Series: Issue 4 Revised - Canada's Metropolitan Areas

Order no.	Series no.	TITLE
63403	04-007	2001 Census Housing Series: Issue 3 Revised- The Adequacy, Suitability and Affordability of Canadian Housing
63405	04-006	House Prices, Borrowing Against Home Equity, and Consumer Expenditures
63380	04-005	Quality of Location and Quality-of-Life in Central Montréal Neighbourhoods
63378	04-004	Canadian Housing Fire Statistics
63417	04-003	Tools for Planning Long-Term Urban Sustainability: The Cities^{PLUS} Design Charrettes
63337	04-002	Residential Intensification Case Studies: Municipal Initiatives
63306	04-001	2001 Census Housing Series: Issue 2 Revised - The Geography of Household Growth and Core Housing Need, 1996-2001
63363	03-024	An Examination of First Nations Housing Management Training Programs
63352	03-023	Housing Needs of Low Income People Living in Rural Areas: Literature Review
63330	03-021	Housing Quality and Children's Socioemotional Health
63296	03-019	Housing Options for Elderly or Chronically Ill Shelter Users
63206	03-018	Residential Integration of Youth with Immigrant Backgrounds in Montréal
63285	03-017	2001 Census Housing Series: Issue 1 - Housing Affordability Improves
63292	03-016	Comparison of Provincial and Territorial Rental Practices
63287	03-015	Applicability of a Continuum of Care Model to Address Homelessness
63283	03-014	Governance in Organizations Addressing Homelessness
63255	03-013	Life Lease Housing in Canada: A Preliminary Exploration of Some Consumer Protection Issues
63253	03-012	Housing Needs of Low-Income People Living in Rural Areas: The Implications for Seniors
63278	03-011	Literature Review of Socio-economic Trends Affecting Consumers and Housing Markets
63245	03-010	Evaluation of Optimal Bath Grab Bar Placement for Seniors
63239	03-009	Impact of the Home Buyers' Plan on Housing Demand
63229	03-008	Examining the Housing Choices of Individuals with Disabilities

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